Technical Report 1298

Criterion-Related Validity of Non-Cognitive Screening Measures among Soldiers with Enlistment Waivers

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November 2011

United States Army Research Institute
for the Behavioral and Social Sciences

U.S. Army Research Institute
for the Behavioral and Social Sciences

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REPORT DOCUMENTATION PAGE

1. REPORT DATE (dd-mm-yy)	2. REPORT TYPE	3. DATES COVERED (from. . . to)
November 2011	Final	April 2010 to July 2011

4. TITLE AND SUBTITLE	5a. CONTRACT OR GRANT NUMBER
Criterion-Related Validity of Non-Cognitive Screening Measures among Soldiers with Enlistment Waivers	W91WAW-09-D-0013 , DO 0008
	5b. PROGRAM ELEMENT NUMBER 622785
6. AUTHOR(S) Matthew S. Fleisher, and Dan J. Putka (Human Resources Research Organization); and Douglas J. Dressel, U.S. Army Research Institute	5c. PROJECT NUMBER A790
	5d. TASK NUMBER 329
	5e. WORKUNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Human Resources Research Organization 66 Canal Center Plaza, Suite 700 Alexandria, Virginia22314	8. PERFORMING ORGANIZATION REPORT NUMBER FR-11-29
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) U.S. Army Research Institute for the Behavioral and Social Sciences ATTN: DAPE-ARI-RS 2511 Jefferson Davis Highway Arlington, VA22202-3926	10. MONITOR ACRONYM ARI
	11. MONITOR REPORT NUMBER Technical Report 1298

12. DISTRIBUTION/AVAILABILITY STATEMENT

Approved for public release; distribution is unlimited.

13. SUPPLEMENTARY NOTES

Contracting Officer's Technical Representative and Subject Matter POC : J. Douglas Dressel

14. ABSTRACT *(Maximum 200 words)*:

This report examines the criterion-related validity of the U.S. Army Research Institute for the Behavioral and Social Sciences' (ARI's) non-cognitive measures for predicting various types of performance, attitudinal, and retention criteria for Soldiers who required waivers for entry. We conducted analyses to evaluate the prediction provided by each instrument in isolation, as well as additional prediction beyond that provided by the Armed Forces Qualification Test, or AFQT—the primary cognitive measure used by the Army for making selection decisions. All analyses were conducted using Soldier data from ARI's Army Class Longitudinal Validation database and Tier One Performance Screen Initial Operational Test and Evaluation (TOPS IOT&E) database, coupled with waiver data obtained from the U.S. Army Recruiting Command (USAREC). The extensive analyses conducted in this research provide evidence that ARI's non-cognitive measures are as valid for Soldiers with waivers as they are for Soldiers without waivers. Although differences in validity do appear, these differences are small; if anything, as a whole, these non-cognitive measures appear to be very slightly more valid for Soldiers with waivers, although it depends upon the specific measure in question.

15. SUBJECT TERMS

enlistment waivers, validation, personnel screening tests, psychological tests

SECURITY CLASSIFICATION OF			19. LIMITATION OF ABSTRACT	20. NUMBER OF PAGES	21. RESPONSIBLE PERSON
16. REPORT	17. ABSTRACT	18. THIS PAGE			
Unclassified	Unclassified	Unclassified	Unlimited	68	Ellen Kinzer Technical Publications Specialist (703) 545-4225

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November 2011

Army Project Number
622785A790

Personnel, Performance and Training Technology

CRITERION-RELATED VALIDITY OF NON-COGNITIVE SCREENING MEASURES AMONG SOLDIERS WITH ENLISTMENT WAIVERS

EXECUTIVE SUMMARY

Research Requirement

The results of the U.S. Army Research Institute for the Behavioral and Social Sciences' (ARI's) Army Class and Tier One Performance Screen Initial Operational Test and Evaluation (TOPS IOT&E) projects demonstrated that certain non-cognitive measures, specifically, the Tailored Adaptive Personality Assessment System (TAPAS), the Assessment of Individual Motivation (AIM), and the Rational Biodata Inventory (RBI), have the potential to enhance new Soldier selection. However, two important issues that might impact future operational use of those measures must be addressed. First, it will be important to know whether those same non-cognitive measures retain their validity when used for Soldiers who require waivers to enter the Army. Waivers extend opportunities for enlistment to promising applicants who would otherwise be prevented from enlisting because of failure to meet standards in areas such as medical fitness and moral character, among others. Second, assuming those measures retain their validity, it will be important to know whether the scales that are most valid for predicting criteria for Soldiers in general are also the most valid scales for predicting criteria for Soldiers with waivers.

Procedure

The analyses summarized in this report were designed to evaluate the criterion-related validity of the ARI non-cognitive measures for predicting various types of performance, attitudinal, and retention criteria for Soldiers who required waivers for entry. We conducted analyses to evaluate the prediction provided by each instrument in isolation, as well as additional prediction beyond that provided by the Armed Forces Qualification Test, or AFQT—the primary cognitive measure used by the Army for making selection decisions. To the extent sample sizes permitted, we also examined the magnitude of differences on ARI's non-cognitive measures between different subgroups (defined by race/ethnicity and gender) for waivered and non-waivered Soldiers. All analyses were conducted using Soldier data from the Army Class Longitudinal Validation database, as well as the TOPS IOT&E database, coupled with waiver data obtained from the U.S. Army Recruiting Command (USAREC).

Findings

The extensive analyses conducted in this research provide evidence that ARI's non-cognitive measures are as valid for Soldiers with waivers as they are for Soldiers without waivers. Although differences in validity do appear, these differences are small. If anything, as a whole, these non-cognitive measures appear to be very slightly more valid for Soldiers with waivers, although it depends upon the specific measure in question. The results also reveal largely trivial differences between waivered and non-waivered groups for predictors by gender. Similarly, the results reveal only trivial differences between waivered and non-waivered groups for predictors by race/ethnic group.

Use and Dissemination of Findings

These findings are useful within the research community and for decision makers, allowing ARI to proceed confidently with devising implementation strategies for adding these non-cognitive measures to the Army's system for selecting non-prior service Soldiers and for determining the appropriate application of these measures. The work described in this report can also inform the potential of ARI's non-cognitive measures to facilitate the waiver approval process.

CRITERION-RELATED VALIDITY OF NON-COGNITIVE SCREENING MEASURES AMONG SOLDIERS WITH ENLISTMENT WAIVERS

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CRITERION-RELATED VALIDITY OF NON-COGNITIVE SCREENING MEASURES AMONG SOLDIERS WITH ENLISTMENT WAIVERS

Chapter 1: Introduction

Background

The Army requires applicants to meet enlistment standards in several areas (e.g., age, mental qualifications, medical fitness, moral character; per AR 601-210, *Personnel Procurement: Active and Reserve Components Enlistment Program*). Applicants who fail to meet these standards are either (a) barred from enlistment, or (b) eligible to have their disqualifying condition waived. The rationale behind the granting of waivers is to extend opportunities for enlistment to promising applicants who would otherwise be prevented from enlisting on the basis of one or more disqualifying conditions. Secondly, waivers allow the Army to increase the pool of applicants who can enlist, thereby facilitating attainment of accession goals.

Although the exact process of determining waiver eligibility and granting waivers differs by the type of waiver being considered (e.g., waivers for law violations versus medical conditions), the process can generally be described as follows: First, a determination is made that an applicant has one or more disqualifying conditions that bars him or her from enlisting. If the condition is potentially waiverable, an applicant may request a waiver for the condition. As noted in AR 601-210 (February 2011), recruiters do not have the authority to disapprove a waiver request, or to refuse to forward the applicant's request to appropriate authorities. In making such a request, the burden is on the applicants to prove to waiver authorities that they have overcome their disqualifying condition, and that their enlistment would be in the best interest of the Army (AR 601-210, February 2011, p. 32).

The approval authority for any given waiver request depends on the type and severity of the disqualifying condition. Generally, the more severe the disqualifying condition, the higher the level of the approval authority required. When considering waiver requests, commanders (waiver authorities) at all levels are instructed to apply the "whole person" concept. Though not explicitly defined in AR 601-210, the spirit behind the whole person concept is to balance the positive attributes of an applicant (e.g., high Armed Forces Qualification Test (AFQT) scores, high school diploma graduate) with the severity of his or her disqualifying condition (e.g., previous criminal history and circumstances surrounding it), and make a judgment as to whether the applicant represents a good risk for the Army in terms of his/her ability to perform effectively as a Soldier and complete his/her term of service.

Objectives of the Current Project

Given the process outlined above, and the general lack of specific, formal guidance provided to authorities for making waiver decisions, the use of non-cognitive measures could provide a potentially valuable, standardized source of information for making or contributing to waiver decisions. The results of the U.S. Army Research Institute for the Behavioral and Social Sciences'(ARI's) Army Class and Tier One Performance Screen Initial Operational Test and Evaluation (TOPS IOT&E) projects have demonstrated that ARI's non-cognitive measures have

the potential to enhance new Soldier selection, but this research has yet to examine specifically whether (a) these measures will retain their validity for predicting criteria for waivered Soldiers, and (b) scales that were most valid for predicting criteria for Soldiers in general would be the ones that are most valid for predicting criteria for waivered Soldiers. The work described in this report begins to help the Army fill these gaps and can inform the potential of ARI's non-cognitive measures to facilitate the waiver approval process.

The ARI non-cognitive measures examined in this project were: (a) a static version of the Tailored Adaptive Personality Assessment System (TAPAS-95s), (b) the adaptive version of the TAPAS currently administered at Military Entrance Processing Stations (MEPS), (c) the Assessment of Individual Motivation (AIM), and (d) the Rational Biodata Inventory (RBI). The TAPAS is a paired-comparison personality assessment capable of measuring up to 22 lower-order facets of the Big Five model. The AIM is a tetrad-based forced-choice personality assessment that measures various aspects of temperament. Lastly, the RBI is a rationally keyed biodata inventory focused on measuring various aspects of past behavior that have been linked to Soldier performance and retention. For more information on these measures, see Kilcullen, Putka, McCloy, and Van Iddekinge (2005), Knapp & Heffner (2009), and Knapp et al. (2009).

The analyses summarized in this report were designed to evaluate the criterion-related validity of the ARI non-cognitive measures for predicting various types of performance, attitudinal, and retention criteria for Soldiers requiring waivers for entry. We conducted analyses to evaluate the prediction provided by each instrument in isolation, as well as additional prediction beyond that provided by the Armed Forces Qualification Test, or AFQT—the primary cognitive measure used by the Army for making selection decisions. To the extent sample sizes permitted, we also examined the magnitude of differences between different subgroups (defined by race/ethnicity and gender) for waivered and non-waivered Soldiers.[1] All analyses were conducted using Soldier data from the Army Class Longitudinal Validation database, as well as the TOPS IOT&E database, coupled with waiver data obtained from the U.S. Army Recruiting Command (USAREC).

Research Samples

As noted above, the current research examined two samples of Soldiers. The first sample included all non-prior service (NPS) Soldiers with data in the Army Class Longitudinal Validation (LV) database for which USAREC waiver records could be found (N= 6,969). According to USAREC records, the vast majority (99.1%) of Soldiers in the Army Class LV sample enlisted in FY 2007 or FY 2008. The second sample included all NPS Soldiers in the TOPS IOT&E database who accessed in FY 2009, 2010, or 2011 according to USAREC records (N = 19,790).[2]

[1] Sample sizes did not permit a formal investigation of test bias among waivered Soldiers (Cleary, 1968; Society for Industrial and Organizational Psychology, Inc., 2003).

[2] At ARI's request an additional filter was used for all TAPAS analyses that removed expected "unmotivated" TAPAS respondents from the analysis sample – these respondents were identified by ARI as part of the TOPS IOT&E work. Additionally, for all attrition related analyses, only Regular Army Soldiers were examined (i.e., Guard and Army Reserve Soldiers were excluded).

For the Army Class LV samples, all three ARI non-cognitive measures noted earlier were subjected to analyses. For the TOPS IOT&E sample, only the TAPAS was examined because data for other measures were not available. Given the plethora of scales available on each measure, and based on recommendations ARI provided at an in-progress review (IPR) on January 19, 2011, we limited analyses and reporting to those composites and scales that were deemed to be most relevant by the group of five ARI and HumRRO psychologists attending the IPR.[3] These focal composites scales included:

- TAPAS: Can-Do Composite[4]
- TAPAS: Will-Do Composite[5]
- TAPAS: Achievement
- TAPAS: Non-Delinquency
- TAPAS: Physical Conditioning
- AIM: Adjustment
- AIM: Physical Conditioning
- AIM: Lie Scale
- RBI: Achievement
- RBI: Fitness Motivation
- RBI: Hostility to Authority
- RBI: Respect for Authority
- RBI: Lie Scale

As with the predictor measures noted above, the criterion measures of focal interest in this research represent a subset of measures from the Army Class LV and TOPS IOT&E studies. These criteria are displayed in Table 1.1 and reflect a mix of performance criteria captured at various points in Soldiers' first-terms of service, i.e., performance, attitudinal, and retention criteria captured at end of initial entry training and in-unit. More thorough descriptions of each of these measures and their basic psychometric properties are detailed in past ARI reports (see Knapp & Heffner, 2009, and Knapp et al., 2009).

[3] This group included Mr. Douglas Dressel and Drs. Tonia Heffner and Michael Rumsey from ARI, and Dr. Dan Putka and Mr. Matthew Fleisher from HumRRO. The discussion focused on which non-cognitive scales would have the most relevant content nexus to the primary types of waivers granted to the Soldiers examined in this research. Also, composites were included that the Army readily uses in decision-making (e.g., Can- and Will-Do composites).
[4] The TAPAS Can-Do composite is comprised of the following scales: Achievement, Non-Delinquency, Even-Temper, Intellectual Efficiency, and Optimism.
[5] The TAPAS Will-Do composite is comprised of the following scales: Achievement, Non-Delinquency, Even-Temper, Attention-Seeking, and Physical Conditioning.

Table 1.1. Key Criterion Measures Examined in the Current Research

Criterion	Description	Army Class LV	TOPS IOT&E
Job Knowledge Criteria			
EOT: MOS-Specific JKT*	End-of-Training MOS-Specific Job Knowledge Test	X	X
EOT: Army-Wide JKT	End-of-Training Army-Wide Job Knowledge Test		X
IU: Army-Wide JKT	In-Unit Army-Wide Job Knowledge Test	X	
EOT: Average AIT Grade*	Advanced Individual Training Average Exam Grade	X	X
Objective Self-Report Criteria			
EOT: APFT	End-of-Training Army Physical Fitness Test	X	X
IU: APFT	In-Unit Army Physical Fitness Test	X	
EOT ALQ: Disciplinary Incidents	In-Unit Army Life Questionnaire Disciplinary Incidents (1 or more = 1) (None = 0)**	X	X
IU ALQ: Disciplinary Incidents	In-Unit Army Life Questionnaire Disciplinary Incidents (1 or more = 1) (None = 0)	X	
Attitudinal Criteria			
EOT ALQ: Adjustment to Army Life	End-of-Training Army Life Questionnaire Adjustment to Army Life Scale	X	X
Retention Criteria			
IMT Graduation	Initial Military Training Graduate (1) vs. Discharge during Reception Battalion, Basic Combat Training, Advanced Individual Training, or One-Station Unit Training (0)	X	
IMT Graduation w/o Fail	Initial Military Training Graduate without a Failure (1) vs. Failed at Least Once during IMT (0)		X
6-Month Attrition	Attrition (1) vs. still in service through 6 months of service (0)	X	X
12-Month Attrition	Attrition (1) vs. still in service through 12 months of service (0)	X	
24-Month Attrition	Attrition (1) vs. still in service through 24 months of service (0)	X	

Note. * Standardized within MOS. **In the TOPS IOT&E analyses *the number of disciplinary incidents* was examined as the criterion rather than the dichotomized version described here. The decision to focus on a dichotomized version of disciplinary incidents for the Army Class LV sample was based on guidance received from the ARI COR, and the nature of the distribution of disciplinary incidents in that sample. Under the descriptions column, numbers noted in the parentheses indicate how the given criterion was coded for purposes of analysis. X = Criterion was measured/administered for the given sample.

Waiver Data

USAREC provided data indicating whether each Soldier in the sample above had an enlistment waiver on record. Table 1.2 provides frequencies of enlistment waivers among each sample of Soldiers. Table 1.2 reveals that 24.5% of Soldiers in the Army Class sample had one

or more enlistment waivers on their record[6], whereas only 13.2% of Soldiers in the TOPS IOT&E sample had enlistment waivers on their record. The large difference between the percentages of Soldiers with waivers is consistent with past reports of a change in waiver policy that made drug waivers and serious conduct waivers more difficult to grant (Center for Accessions Research, 2009). In part, waiver policy changed because the Army could be more selective due to the decline in the economy. The most prevalent type of waiver among Army Class Soldiers was conduct waivers (12.9% of Soldiers), whereas medical waivers were the most prevalent type of waiver among those tested in the TOPS IOT&E (6.3% of Soldiers). Indeed, conduct and medical waivers accounted for 84.6% of all waivers in the Army Class LV sample, and 81.6% of all waivers in the TOPS IOT&E sample.[7] The vast majority of conduct waivers were for serious non-traffic offenses in both samples. Beyond conduct and medical waivers, the most prevalent type of waiver in both samples were dependency waivers[8], and these were granted to only 3.9% of Army Class Soldiers, and 2.7% of TOPS IOT&E Soldiers.

Overview of the Remainder of the Report

The remaining chapters of this report address the research's objectives. Chapter 2 provides basic descriptive statistics and effects sizes indexing differences between waivered and non-waivered Soldiers on the AFQT, ARI non-cognitive measures, and various criteria. Chapter 3 provides criterion-related validity and incremental validity analyses for each ARI non-cognitive measure. Chapter 4 examines the extent to which subgroup differences existed on ARI non-cognitive measures among waivered Soldiers. Finally, Chapter 5 summarizes our conclusions and recommendations based on the current research investigation.

Table 1.2. Frequencies of Enlistment Waivers in Army Class LV and TOPS IOT&E Samples

	Army Class LV			TOPS IOT&E		
Soldier has at least one enlistment waiver for…	*n*	%All	%W	*n*	%All	%W
Any type of reason	1,707	24.5	100.0	2,611	13.2	100.0
1. Conduct	902	12.9	52.8	894	4.5	34.2
2. Medical	543	7.8	31.8	1,238	6.3	47.4
3. Dependency	272	3.9	15.9	535	2.7	20.5
4. Drug	157	2.3	9.2	0	0.0	0.0
5. Administrative-Other	50	0.7	2.9	115	0.6	4.4

Notes. Total Army Class N = 6,969. Total TOPS IOT&E N = 19,790. Totals within each waiver type do not add up because some Soldiers received more than one waiver. In the Army Class sample, two Soldiers each had two waivers for *Dependency due to Number of Dependents* because both Soldiers received waivers from Recruiting Command Headquarters level *and* US Army Battalion level.

[6] It should be noted that Soldiers can receive more than one *type* of waiver and can receive more than one of the same type of waiver, although typically Soldiers receive only one waiver if they are granted one.

[7] In light of the distribution of waivers presented in Table 1.2, all "waiver type" analyses in subsequent chapters focused on conduct and medical waivers. A third "other waiver" category was created that included all other types of waivers.

[8] Dependency waivers are granted for various reasons (e.g., If the applicant is married and in addition to the spouse has three or more dependents under the age of 18; If the applicant has a spouse currently on active deployment and has a dependent less than the age of 18).

Chapter 2: Characteristics of Waivered vs. Non-Waivered Soldiers

In this chapter, we provide basic descriptive statistics and effect sizes indexing differences between waivered and non-waivered Soldiers on the ARI non-cognitive measures and criteria examined. The analyses inform whether waivered Soldiers tend to have lower (or higher) standing on (a) traits and temperaments that have been found to be important predictors of performance and retention outcomes in past ARI enlisted research, and (b) key performance and retention outcomes relative to non-waivered Soldiers. The latter differences are particularly important to consider because if waiver recipients tend to experience more negative outcomes then non-waivered Soldiers, the Army may need to strengthen the waiver approval process to bring the standing of waivered Soldiers on key criteria more in line with non-waivered Soldiers. Whether the ARI non-cognitive measures can assist in such decision making is the subject of Chapter 3.

Comparing Waivered and Non-Waivered Soldiers' Standing on Predictor Measures

Tables 2.1 and 2.2 provide a comparison of waivered and non-waivered Soldiers on the AFQT and each of the ARI non-cognitive measures outlined in Chapter 1. Overall, these results suggest that the profile of waivered and non-waivered Soldiers is very similar. Indeed, the largest effect size was only .19 (TAPAS Achievement in the TOPS IOT&E sample), which is small according to common conventions (Cohen, 1988).

Table 2.1. Comparison of Waivered and Non-waivered Soldiers on Predictors in the Army Class LV Sample

		Waivered			Non-waivered		
Predictor	*d*	*N*	*M*	*SD*	*N*	*M*	*SD*
AFQT	0.17	1,695	58.41	18.66	5,236	55.24	19.46
TAPAS							
Can Do Composite	0.07	830	-0.34	1.76	2,224	-0.47	1.79
Will Do Composite	0.08	830	0.18	1.82	2,224	0.04	1.90
Achievement	0.08	830	0.21	0.68	2,224	0.16	0.63
Non-delinquency	-0.09	830	0.05	0.62	2,224	0.11	0.65
Physical Conditioning	0.05	830	0.15	0.72	2,224	0.11	0.71
AIM							
Adjustment	0.01	904	1.27	0.29	2,281	1.27	0.29
Physical Conditioning	0.07	895	1.21	0.34	2,260	1.18	0.34
Lie Scale	-0.08	928	0.15	0.17	2,336	0.16	0.17
RBI							
Achievement	-0.04	1,405	3.51	0.57	4,090	3.54	0.58
Fitness Motivation	0.00	1,405	3.28	0.68	4,090	3.28	0.68
Hostility to Authority	0.13	1,405	2.59	0.64	4,090	2.50	0.66
Respect for Authority	-0.04	1,405	3.48	0.69	4,089	3.51	0.69
Lie Scale	-0.02	1,405	0.10	0.15	4,090	0.10	0.15

Note. d = Cohen's *d* effect size for Waivered - Non-waivered mean difference. Effect sizes calculated as (mean of Waivered group - mean of Non-waivered group) / pooled *SD* across groups.

Table 2.2. Comparison of Waivered and Non-waivered Soldiers on Predictors in the TOPS IOT&E Sample

		Waivered			Non-waivered		
Predictor	*d*	*N*	*M*	*SD*	*N*	*M*	*SD*
AFQT	0.13	2,611	64.12	20.65	17,179	61.41	20.84
TAPAS							
Can Do Composite	0.16	2,493	0.20	0.99	16,298	0.04	0.98
Will Do Composite	0.08	2,493	0.11	1.00	16,298	0.03	1.00
Achievement	0.19	2,493	0.17	1.00	16,298	-0.02	1.00
Non-delinquency	0.03	2,493	0.06	0.98	16,298	0.04	0.99
Physical Conditioning	-0.05	2,493	-0.05	1.00	16,298	0.00	1.00

Note. d = Cohen's d effect size for Waivered - Non-waivered mean difference. Effect sizes calculated as (mean of Waivered group - mean of Non-waivered group) / pooled *SD* across groups.

Of course it is possible that simply comparing waivered Soldiers to non-waivered Soldiers may mask differences between Soldiers with a specific type of waiver and those without a waiver. Indeed, the Army grants waivers for a variety of reasons, and it is reasonable to expect that the trait-temperament profile of someone requiring a conduct waiver for entry may look different from someone requiring a medical waiver for entry. As such, grouping substantially different types of waivers together (as is done in Tables 2.1 and 2.2) may mask differences between Soldiers with a *particular type of waiver* and non-waivered Soldiers. Thus, we conducted a set of supplemental analyses that compared non-waivered Soldiers to three other groups of Soldiers, namely: (a) conduct waiver recipients, (b) medical waiver recipients, and (c) recipients of other types of waivers. Given their supplemental nature, result tables for these analyses are presented in Appendix A (see Tables A.1 and A.2). A review of these results revealed some slightly larger differences in some cases, but the few differences found were still only small to moderate in magnitude. For example, perhaps the most theoretically meaningful difference was found for TAPAS Non-Delinquency and RBI Hostility to Authority scores – which have a clear content nexus to deviant behavior. Conduct waiver recipients were found to have TAPAS Non-Delinquency scores and RBI Hostility to Authority scores that were .23 *SD*s lower, and .36 *SD*s higher (respectively) than non-waivered Soldiers. In contrast, as one might expect, mean scores on these scales for Soldiers with medical waivers and non-waivered Soldiers were nearly identical. Theoretically, this set of findings appears to provide a form of construct validity evidence for these scales.

Comparing Waivered and Non-Waivered Soldiers' Standing on Key Criteria

Tables 2.3 through 2.6 provide a comparison of waivered and non-waivered Soldiers on the criterion measures outlined in Chapter 1. Tables 2.3 and 2.4 focus on continuously scaled criteria (e.g., JKT, APFT scores), whereas Tables 2.5 and 2.6 focus on dichotomous criteria (e.g., attrition, graduation status). Like the results for predictor measures presented in the previous section, the results below reveal few differences between the standing of waivered and non-waivered Soldiers on key criteria. In terms of the continuously scaled criteria, the largest effect size was only .25 (EOT Average AIT Grade in the Army Class LV sample) and the direction of the effect was such that waivered Soldiers actually performed better than non-waivered Soldiers. Note that this finding is also in line with the higher average AFQT scores for waivered Soldiers. However, the magnitude of differences for EOT Average AIT Grade did not hold up in the TOPS IOT&E sample, where the effects size was found to be only .09. In terms of the

dichotomous criteria, effects were also small. For example the 24-month attrition rate for waivered Soldiers in the Army Class LV sample was 25.8% vs. 23.8% for non-waivered Soldiers.

Table 2.3. Comparison of Waivered and Non-waivered Soldiers on Continuously Scaled Criterion Measures in the Army Class LV Sample

		Waivered			Non-waivered		
Criterion	*d*	*N*	*M*	*SD*	*N*	*M*	*SD*
EOT: MOS-Specific JKT	0.02	329	0.03	0.97	1,123	0.01	1.01
IU: Army-Wide JKT	0.09	333	0.67	0.21	940	0.65	0.21
EOT: APFT	0.12	353	246.54	30.52	1,179	242.61	32.74
IU: APFT	0.00	296	244.48	36.61	843	244.58	72.58
EOT: Average AIT Grade	0.25	281	0.13	0.81	701	-0.10	1.05
EOT ALQ: Adjustment to Army Life	0.15	353	3.75	0.70	1,186	3.65	0.69

Note. d = Cohen's *d* effect size for Waivered - Non-waivered mean difference. Effect sizes calculated as (mean of Waivered group - mean of Non-waivered group) / pooled *SD* across groups.

Table 2.4. Comparison of Waivered and Non-waivered Soldiers on Continuously Scaled Criterion Measures in the TOPS IOT&E Sample

		Waivered			Non-waivered		
Criterion	*d*	*N*	*M*	*SD*	*N*	*M*	*SD*
EOT: Army-Wide JKT	0.11	193	20.82	3.52	1,401	20.42	3.95
EOT: MOS-Specific JKT	0.07	164	0.13	0.93	1,161	0.06	1.01
EOT: APFT	0.12	194	253.20	29.12	1,425	249.52	31.61
EOT: Average AIT Grade	0.09	280	0.04	1.01	2,142	-0.05	0.99
EOT ALQ: Adjustment to Army Life	0.07	198	4.10	0.66	1,438	4.06	0.65
EOT ALQ: Disciplinary Incidents	-0.04	88	0.26	0.58	701	0.29	0.62

Note. d = Cohen's *d* effect size for Waivered - Non-waivered mean difference. Effect sizes calculated as (mean of Waivered group - mean of Non-waivered group) / pooled *SD* across groups.

Table 2.5. Comparison of Waivered and Non-waivered Soldiers on Dichotomous Criterion Measures in the Army Class LV Sample

	Waivered		Non-waivered	
Criterion	*N*	%	*N*	%
EOT ALQ Disciplinary Incidents	353	29.7	1,186	30.8
IU ALQ: Disciplinary Incidents	300	30.0	862	33.1
IMT Graduation	1,081	85.1	3,542	87.3
6-month Attrition	1,329	12.3	3,875	11.4
12-month Attrition	1,329	17.2	3,873	16.5
24-month Attrition	1,327	25.8	3,872	23.8

Note. N = Total number of Soldiers in the given category with valid values on the given criterion. % = Percentage of Soldiers in the given category who experienced the event in question (i.e., % who have one or more disciplinary incidents, % who graduated from IMT, % who separated within x-months of entering service).

Table 2.6. Comparison of Waivered and Non-waivered Soldiers on Dichotomous Criterion Measures in the TOPS IOT&E Sample

	Waivered		Non-waivered	
Criterion	*N*	%	*N*	%
IMT Graduation w/o Fail	604	86.6	3,769	87.0
6-month Attrition	554	8.3	3,613	10.5

Note. N = Total number of Soldiers in the given category with valid values on the given criterion. *%* = Percentage of Soldiers in the given category who experienced the event in question (i.e., % who graduated from IMT without a single failure, % who separated within 6 months of entering service).

As noted earlier, it is possible that simply comparing the criterion data of waivered Soldiers to non-waivered Soldiers may mask differences between Soldiers with a specific type of waiver and those without a waiver. For example, it seems reasonable to expect that Soldiers who require a conduct waiver for entry may be more likely to have disciplinary incidents in service, or be more likely to attrit during their first term of service (Strickland, 2005). As such, grouping Soldiers with conduct waivers and those with other forms of waivers (as is done in Tables 2.3 through 2.6) may mask differences between Soldiers with *conduct waivers* and non-waivered Soldiers. Thus, we conducted analyses using the same waiver categories described for the predictor analyses. Tables for these analyses are presented in Appendix A (see Tables A.3 through A.6). A review of these results again revealed only small effects. Indeed, where differences were found they tended to be in favor of waivered Soldiers.

Overall these findings suggest that the Army's waiver approval process is effective at identifying Soldiers who fare as well on key criteria as non-waivered Soldiers (or conversely, screening out applicants who would not fare as well).

Chapter 3: Criterion-Related Validity Analyses

This chapter provides criterion-related validity and incremental validity analyses for each ARI non-cognitive measure. The analyses address two broad research questions:

(1) Are ARI non-cognitive measures valid predictors of important performance outcomes for Soldiers who received waivers?
(2) Are there systematic, meaningful differences in the validity of ARI non-cognitive measures for waivered versus non-waivered Soldiers?

It is important to know if non-cognitive measures used for selection are not valid or are less valid among waiver recipients because such a conclusion would call into question their use with waivered populations. Further, if different non-cognitive measures are valid for Soldiers receiving waivers than for non-waivered Soldiers, there would be implications for differentially weighting particular scales to create composite scores.

Criterion-related Validity of Predictor Measures among Waivered and Non-Waivered Soldiers

Validity for Predicting Job Knowledge Test Scores

Tables 3.1 and 3.2 provide single-predictor validity estimates for the AFQT and each of the non-cognitive measures in the prediction of Army Job Knowledge Tests (JKTs). Correlations in bold are significantly different from zero, and correlations enclosed in boxes are significantly different from the same correlation among non-waivered Soldiers.[9] All validity estimates presented in this report are uncorrected estimates.

A useful method for interpreting these relationships is to consider the correlation among non-waivered Soldiers as a baseline (shown under the "No Waiver" column). If this correlation differs significantly from zero, then it is important that none of the same correlations among waivered Soldiers differ significantly from the baseline correlation. For example, the correlation of the AFQT with end of training MOS-Specific JKT in Table 3.1 (Army Class LV sample) among non-waivered Soldiers (r = .45) is significant, and none of the same correlations in waivered samples (Conduct, Medical, Other) differ significantly from this value (r = .38 to .42). In contrast, the end of training MOS-Specific JKT in Table 3.2 (TOPS IOT&E sample) provides different results. Specifically, the AFQT demonstrates adequate validity (r = .39), but the same predictor—criterion correlation is significantly lower among waivered Soldiers (r = .21). Nevertheless, caution needs to be taken when interpreting this latter difference because Soldiers with waivers were likely granted those in part based on their AFQT scores – recall that AFQT scores were higher for Soldiers with waivers and the bottom of the AFQT distribution (e.g., Cat IIIB and IV) is likely absent for Soldiers with waivers. Thus, AFQT-related correlations among Soldiers with waivers are likely more attenuated due to range restriction relative to AFQT-related correlations among non-waivered Soldiers.

[9] Differences in correlations between waivered and non-waivered Soldiers were tested for statistical significance using a test for the difference between independent correlations (Cohen, Cohen, West, & Aiken, 2003).

Table 3.1. Correlations between Predictors and Job Knowledge Test Scores for Waivered and Non-Waivered Soldiers in the Army Class LV Sample

	No Waiver		Any Waiver		Conduct Waiver		Medical Waiver		Other Waiver	
Predictor	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*
					EOT: MOS-Specific JKT					
AFQT	1,121	**.45**	328	**.40**	199	**.38**	103	**.40**	58	**.42**
TAPAS										
Can Do Composite	390	**.23**	112	**.29**	62	**.31**	38	.09	21	.16
Will Do Composite	390	.09	112	**.24**	62	.19	38	.18	21	.24
Achievement	390	.03	112	**.24**	62	**.30**	38	.23	21	.15
Non-delinquency	390	.08	112	**.19**	62	.25	38	.10	21	-.07
Physical Conditioning	390	-.05	112	.05	62	.00	38	.11	21	.23
AIM										
Adjustment	311	**.15**	122	.04	79	-.03	32	-.03	22	-.01
Physical Conditioning	307	.03	118	**.19**	75	.16	31	.28	22	.18
Lie Scale	320	**-.13**	123	**-.21**	79	-.19	33	**-.36**	22	-.29
RBI										
Achievement	864	**-.09**	280	.01	175	.00	82	.06	53	.00
Fitness Motivation	864	.00	280	.00	175	.05	82	.03	53	**-.33**
Hostility to Authority	864	**-.11**	280	**-.18**	175	-.14	82	**-.30**	53	-.07
Respect for Authority	864	-.01	280	-.04	175	-.10	82	.05	53	.08
Lie Scale	864	**-.12**	280	-.10	175	-.11	82	-.13	53	-.16
					IU: Army-Wide JKT					
AFQT	933	**.23**	330	**.27**	177	**.28**	118	**.35**	81	.12
TAPAS										
Can Do Composite	365	.09	142	**.19**	77	**.33**	48	.16	41	.11
Will Do Composite	365	.01	142	.16	77	**.26**	48	.11	41	.18
Achievement	365	**-.11**	142	.16	77	**.33**	48	.21	41	.08
Non-delinquency	365	-.06	142	.01	77	.10	48	-.08	41	.19
Physical Conditioning	365	.03	142	.09	77	.08	48	.07	41	.09
AIM										
Adjustment	374	.04	149	**.17**	84	**.24**	44	-.01	46	.16
Physical Conditioning	369	-.03	146	.02	79	.02	45	.08	45	.08
Lie Scale	380	**-.13**	153	-.02	85	.04	48	-.14	47	-.03
RBI										
Achievement	746	-.07	281	.08	148	.13	96	.11	74	.02
Fitness Motivation	746	**.09**	281	**.15**	148	.09	96	.13	74	.18
Hostility to Authority	746	-.06	281	-.10	148	-.15	96	-.14	74	-.05
Respect for Authority	746	-.02	281	.09	148	**.18**	96	.13	74	-.08
Lie Scale	746	-.06	281	-.02	148	-.02	96	-.02	74	.03

Note. Correlations in bold are statistically significant, $p < .05$ (two-tailed). Correlations enclosed in boxes are significantly different from those of non-waivered Soldiers, $p < .05$ (two-tailed).

Table 3.2. Correlations between Predictors and Job Knowledge Test Scores for Waivered and Non-Waivered Soldiers in the TOPS IOT&E Sample

	No Waiver		Any Waiver		Conduct Waiver		Medical Waiver		Other Waiver	
Predictor	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*
					EOT: MOS-Specific JKT					
AFQT	1,161	**.39**	164	**.21**	66	**.27**	76	.09	33	-.18
TAPAS										
Can Do Composite	1,110	.04	157	.03	62	.18	73	-.12	32	-.09
Will Do Composite	1,110	-.02	157	-.04	62	.09	73	-.07	32	-.14
Achievement	1,110	-.01	157	.13	62	**.32**	73	.03	32	-.01
Non-delinquency	1,110	-.03	157	-.07	62	.11	73	-.11	32	**-.35**
Physical Conditioning	1,110	-.01	157	-.08	62	-.10	73	-.13	32	.19
					EOT: Army-Wide JKT					
AFQT	1,401	**.50**	193	**.43**	77	**.45**	86	**.28**	44	**.45**
TAPAS										
Can Do Composite	1,333	**.11**	183	.08	71	.22	82	-.12	43	.21
Will Do Composite	1,333	.03	183	-.04	71	.05	82	-.15	43	.02
Achievement	1,333	**.07**	183	.09	71	**.25**	82	-.09	43	.11
Non-delinquency	1,333	-.03	183	-.07	71	-.07	82	-.17	43	.16
Physical Conditioning	1,333	.04	183	-.01	71	.04	82	-.10	43	.10

Note. Correlations in bold are statistically significant, $p < .05$ (two-tailed). Correlations enclosed in boxes are significantly different from those of non-waivered Soldiers, $p < .05$ (two-tailed).

In Table 3.2 the TAPAS Can Do composite is significantly related to the end of training Army-Wide JKT ($r = .11$), but this relationship is significantly lower among Soldiers with medical waivers ($r = -.12$). However, it should be noted that many of these differences may simply reflect random sample-specific variance (i.e., sampling error). This is especially problematic for groups with small samples sizes. Some sample sizes reported in Table 3.1 and elsewhere are quite small. Thus, values in these cases, especially if they are not statistically significant, should be interpreted with extreme caution. For example, among Soldiers in the 'other' waiver category, the TAPAS Can Do and Will Do composites are correlated with MOS-specific JKT scores at $r = .16$ and $r = .24$, respectively. However, for these correlations $N = 21$. Thus, the confidence intervals are exceptionally wide, i.e., -.19 to .39 for Can Do with MOS-specific JKT, and -.14 to .45 for Will Do with MOS-specific JKT, representing a large amount of uncertainty. Therefore, these values should not be interpreted as stable (and therefore meaningful) estimates of predictive validity.

A brief examination of the correlations enclosed in boxes in Tables 3.1 and 3.2 reveals that validity is higher among waivered Soldiers at least as often as it is lower. In the absence of systematic variation, this is likely attributable to sampling error. However, one finding is fairly consistent across the two tables; that is, achievement appears to better predict JKT scores among

waivered Soldiers than non-waivered Soldiers. These validity coefficients are consistently and significantly higher across different achievement scales and samples.[10]

Validity for Predicting AIT Course Grades

Table 3.3 reveals no significant differences between validity estimates among waivered and non-waivered Soldiers with respect to average AIT grade in the Army Class LV sample. Table 3.4 reports a few significant differences favoring non-waivered Soldiers in the TOPS IOT&E sample; however, these findings are not consistent with the Army Class LV sample results. Examining bolded validity estimates significantly different from zero in Tables 3.1—3.4 reveals that, in general, several non-cognitive scales are valid predictors of job knowledge and AIT grades among waivered Soldiers, especially TAPAS Can Do and Will Do composites, and achievement, although there are some exceptions to this trend.

Table 3.3. Correlations between Predictors and Average AIT Grade for Waivered and Non-Waivered Soldiers in the Army Class LV Sample

	EOT: Average AIT Grade									
	No Waiver		Any Waiver		Conduct Waiver		Medical Waiver		Other Waiver	
Predictor	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*
AFQT	693	**.32**	277	**.36**	156	**.36**	69	**.38**	87	**.33**
TAPAS										
Can Do Composite	383	**.24**	151	**.23**	79	**.23**	47	**.50**	48	.11
Will Do Composite	383	**.15**	151	**.20**	79	**.24**	47	**.31**	48	.02
Achievement	383	**.15**	151	**.17**	79	**.23**	47	.08	48	.23
Non-delinquency	383	**.16**	151	.09	79	.21	47	.04	48	-.10
Physical Conditioning	383	-.04	151	-.01	79	-.03	47	.05	48	.03
AIM										
Adjustment	440	**.14**	170	.12	94	.07	48	**.30**	53	.00
Physical Conditioning	435	.01	169	.06	94	.09	48	.03	52	.12
Lie Scale	448	**-.15**	173	**-.19**	96	-.20	48	-.25	54	-.24
RBI										
Achievement	498	.00	207	.07	111	.09	53	.04	67	.15
Fitness Motivation	498	-.02	207	.05	111	.13	53	.05	67	-.01
Hostility to Authority	498	**-.14**	207	**-.16**	111	**-.19**	53	-.16	67	-.12
Respect for Authority	498	.01	207	.06	111	.09	53	.11	67	-.05
Lie Scale	498	**-.10**	207	-.08	111	-.11	53	.03	67	.01

Note. Correlations in bold are statistically significant, $p < .05$ (two-tailed). Correlations enclosed in boxes are significantly different from those of non-waivered Soldiers, $p < .05$ (two-tailed).

[10] We checked to see if the patterns of variance of both predictors and criteria could help to explain this finding; however, they could not.

Table 3.4. Correlations between Predictors and Average AIT Grade for Waivered and Non-Waivered Soldiers in the TOPS IOT&E Sample

	EOT: Average AIT Grade									
	No Waiver		Any Waiver		Conduct Waiver		Medical Waiver		Other Waiver	
Predictor	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*
AFQT	2,142	**.30**	280	**.30**	78	.21	127	**.32**	92	.17
TAPAS										
Can Do Composite	1,999	**.07**	267	.08	75	.06	118	.11	90	-.04
Will Do Composite	1,999	**.06**	267	-.04	75	.11	118	-.13	90	-.12
Achievement	1,999	.02	267	.08	75	.08	118	.02	90	.09
Non-delinquency	1,999	**.05**	267	-.09	75	-.01	118	-.14	90	-.10
Physical Conditioning	1,999	.00	267	-.11	75	-.12	118	-.15	90	-.13

Note. Correlations in bold are statistically significant, $p < .05$ (two-tailed). Correlations enclosed in boxes are significantly different from those of non-waivered Soldiers, $p < .05$ (two-tailed).

Validity for Predicting Army Physical Fitness Test (APFT) Scores

Not surprisingly, Tables 3.5 and 3.6 show that Physical Conditioning (TAPAS, AIM) and fitness motivation (RBI) are the best predictors of self-reported APFT scores. This finding is robust across scales and samples. Additionally, validity for these scales is typically significantly higher among waivered Soldiers than among non-waivered Soldiers. Once again, where there are significant differences between relationships across samples, these differences typically favor waivered Soldiers. Interestingly, AIM and RBI lie scales are moderately negatively related to self-reported APFT scores at the end of training among Soldiers with medical waivers.

Table 3.5. Correlations between Predictors and APFT Scores for Waivered and Non-Waivered Soldiers in the Army Class LV Sample

	No Waiver		Any Waiver		Conduct Waiver		Medical Waiver		Other Waiver	
Predictor	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*
					EOT: APFT					
AFQT	1,176	.04	352	-.01	212	.03	110	-.03	66	-.08
TAPAS										
Can Do Composite	414	.04	119	-.04	63	.04	42	**-.33**	23	**.43**
Will Do Composite	414	.08	119	.09	63	.10	42	-.12	23	.31
Achievement	414	**.11**	119	.12	63	.15	42	-.03	23	.39
Non-delinquency	414	**-.11**	119	-.15	63	-.16	42	-.24	23	-.12
Physical Conditioning	414	**.23**	119	**.49**	63	**.54**	42	**.56**	23	.40
AIM										
Adjustment	313	.05	129	.01	81	.10	35	-.19	24	.06
Physical Conditioning	309	**.24**	125	**.40**	77	**.31**	34	**.65**	24	.36
Lie Scale	322	.08	130	-.09	81	-.05	36	-.29	24	-.02
RBI										
Achievement	896	**.13**	300	.04	186	.00	87	.04	60	.20
Fitness Motivation	896	**.39**	300	**.35**	186	**.34**	87	**.51**	60	**.29**
Hostility to Authority	896	**-.07**	300	.08	186	-.01	87	.21	60	.10
Respect for Authority	896	.01	300	-.01	186	-.02	87	-.06	60	-.03
Lie Scale	896	.03	300	-.02	186	.03	87	**-.31**	60	.06
					IU: APFT					
AFQT	836	-.01	294	.08	159	**.21**	106	.10	68	-.18
TAPAS										
Can Do Composite	316	-.01	119	.09	65	.16	42	.22	31	-.19
Will Do Composite	316	.04	119	**.20**	65	**.34**	42	.16	31	.02
Achievement	316	-.04	119	**.22**	65	.22	42	**.50**	31	.00
Non-delinquency	316	-.09	119	-.13	65	-.10	42	-.07	31	-.33
Physical Conditioning	316	**.27**	119	**.42**	65	**.42**	42	**.39**	31	**.54**
AIM										
Adjustment	330	.01	127	**.28**	72	.17	39	.20	36	**.51**
Physical Conditioning	327	**.24**	124	**.26**	68	**.26**	39	.23	34	.32
Lie Scale	336	-.07	130	-.09	73	-.18	42	-.05	36	-.02
RBI										
Achievement	674	**.08**	251	.11	136	.07	85	**.22**	61	-.06
Fitness Motivation	674	**.20**	251	**.38**	136	**.33**	85	**.44**	61	**.40**
Hostility to Authority	674	-.03	251	-.01	136	-.05	85	-.02	61	-.05
Respect for Authority	674	.04	251	.04	136	-.04	85	.07	61	.01
Lie Scale	674	.01	251	.07	136	.11	85	-.03	61	.06

Note. Correlations in bold are statistically significant, $p < .05$ (two-tailed). Correlations enclosed in boxes are significantly different from those of non-waivered Soldiers, $p < .05$ (two-tailed).

Table 3.6. Correlations between Predictors and APFT Scores for Waivered and Non-Waivered Soldiers in the TOPS IOT&E Sample

	EOT: APFT									
	No Waiver		Any Waiver		Conduct Waiver		Medical Waiver		Other Waiver	
Predictor	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*
AFQT	1,425	**.08**	194	.14	79	.13	88	**.23**	41	-.06
TAPAS										
Can Do Composite	1,351	-.03	185	.03	73	-.08	84	.08	41	.12
Will Do Composite	1,351	**.06**	185	.08	73	-.05	84	.18	41	.09
Achievement	1,351	**.09**	185	.09	73	.02	84	.12	41	.13
Non-delinquency	1,351	**-.09**	185	-.12	73	**-.25**	84	-.03	41	-.06
Physical Conditioning	1,351	**.26**	185	**.23**	73	.16	84	**.29**	41	.25

Note. Correlations in bold are statistically significant, $p < .05$ (two-tailed). Correlations enclosed in boxes are significantly different from those of non-waivered Soldiers, $p < .05$ (two-tailed).

Validity for Predicting Disciplinary Incidents

Tables 3.7 and 3.8 reveal some differences in validity between waivered and non-waivered Soldiers regarding disciplinary incidents. Most of the differences appear to be isolated to the AIM and RBI lie scales, with the general trend being that these scales are (a) positively related to disciplinary incidents during training among waivered Soldiers, but (b) fairly unrelated to disciplinary incidents among non-waivered Soldiers.

Table 3.7. Point-Biserial Correlations between Predictors and Disciplinary Incidents for Waivered and Non-Waivered Soldiers in the Army Class LV Sample

	No Waiver		Any Waiver		Conduct Waiver		Medical Waiver		Other Waiver	
Predictor	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*
					EOT ALQ: Disciplinary Incidents					
AFQT	1,183	**-.10**	352	-.06	212	-.10	110	-.08	66	-.06
TAPAS										
Can Do Composite	414	-.07	119	-.04	63	.00	42	-.08	23	-.03
Will Do Composite	414	-.09	119	-.13	63	-.09	42	-.11	23	-.40
Achievement	414	.00	119	-.04	63	-.06	42	.07	23	-.19
Non-delinquency	414	-.06	119	.01	63	.18	42	-.13	23	-.10
Physical Conditioning	414	.01	119	-.02	63	-.04	42	.03	23	-.11
AIM										
Adjustment	313	-.06	129	.14	81	.14	35	.26	24	.19
Physical Conditioning	309	-.09	125	-.02	77	-.02	34	-.03	24	-.16
Lie Scale	322	-.02	130	**.21**	81	**.23**	36	**.42**	24	.14
RBI										
Achievement	903	.01	300	.05	186	**.16**	87	-.13	60	-.09
Fitness Motivation	903	**-.09**	300	-.01	186	-.05	87	.04	60	.00
Hostility to Authority	903	.04	300	.02	186	-.02	87	.12	60	.05
Respect for Authority	903	.06	300	.09	186	.13	87	.06	60	.13
Lie Scale	903	-.03	300	.07	186	.05	87	**.27**	60	-.01
					IU ALQ: Disciplinary Incidents					
AFQT	855	-.06	298	.05	164	.10	108	-.03	68	.00
TAPAS										
Can Do Composite	336	**-.14**	123	-.10	68	-.02	44	-.13	31	**-.40**
Will Do Composite	336	**-.16**	123	-.12	68	-.07	44	-.15	31	-.12
Achievement	336	**-.12**	123	.03	68	.15	44	.01	31	-.17
Non-delinquency	336	**-.14**	123	-.16	68	-.02	44	-.30	31	-.31
Physical Conditioning	336	-.03	123	.06	68	-.05	44	.15	31	**.43**
AIM										
Adjustment	346	.01	131	-.03	75	.04	41	.00	37	-.16
Physical Conditioning	341	-.04	129	-.12	72	-.19	42	.05	35	-.13
Lie Scale	352	.10	134	.04	76	.06	44	-.02	37	.21
RBI										
Achievement	685	-.01	254	-.05	137	.06	88	-.18	63	-.11
Fitness Motivation	685	.02	254	.08	137	.07	88	.09	63	.16
Hostility to Authority	685	**.15**	254	.10	137	.09	88	.15	63	.22
Respect for Authority	685	**-.08**	254	-.11	137	-.04	88	-.20	63	-.15
Lie Scale	685	.01	254	-.09	137	.01	88	**-.24**	63	-.15

Note. Correlations in bold are statistically significant, $p < .05$ (two-tailed). Correlations enclosed in boxes are significantly different from those of non-waivered Soldiers, $p < .05$ (two-tailed). Coding for disciplinary incidents criteria were as follows: One or more disciplinary incidents = 1, No disciplinary incidents = 0.

Table 3.8. Correlations between Predictors and Disciplinary Incidents for Waivered and Non-Waivered Soldiers in the TOPS IOT&E Sample

	EOT ALQ: Disciplinary Incidents									
	No Waiver		Any Waiver		Conduct Waiver		Medical Waiver		Other Waiver	
Predictor	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*
AFQT	701	-.04	88	-.19	45	-.03	39	**-.40**	9	[a]
TAPAS										
Can Do Composite	668	-.07	83	-.12	42	.05	37	-.29	9	[a]
Will Do Composite	668	**-.09**	83	.00	42	.11	37	-.04	9	[a]
Achievement	668	**-.13**	83	-.04	42	.07	37	-.19	9	[a]
Non-delinquency	668	-.03	83	.02	42	.12	37	-.09	9	[a]
Physical Conditioning	668	-.06	83	-.02	42	-.07	37	.06	9	[a]

Note. [a] Zero Variance. Correlations in bold are statistically significant, $p < .05$ (two-tailed). Correlations enclosed in boxes are significantly different from those of non-waivered Soldiers, $p < .05$ (two-tailed).

Validity for Predicting Adjustment to Army Life

In Tables 3.9 and 3.10, notable differences in validity among waivered and non-waivered Soldiers in the prediction of adjustment to Army life include lower validity estimates among waivered Soldiers for RBI achievement, fitness motivation, and respect for authority in the Army Class LV sample, and TAPAS achievement in the TOPS IOT&E sample. There is also a relatively strong negative correlation between the AIM lie scale and adjustment to Army life in the Army Class LV sample of Soldiers with medical waivers ($r = -.40$); however, this estimate is based on data from only 36 Soldiers.

Table 3.9. Correlations between Predictors and End of Training Adjustment to Army Life for Waivered and Non-Waivered Soldiers in the Army Class LV Sample

	EOT ALQ: Adjustment to Army Life									
	No Waiver		Any Waiver		Conduct Waiver		Medical Waiver		Other Waiver	
Predictor	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*
AFQT	1,183	**.09**	352	.10	212	.07	110	**.22**	66	.03
TAPAS										
Can Do Composite	414	**.20**	119	.13	63	.09	42	.01	23	**.43**
Will Do Composite	414	**.16**	119	.16	63	.05	42	.21	23	.34
Achievement	414	**.18**	119	.16	63	.10	42	.21	23	.40
Non-delinquency	414	.01	119	-.04	63	-.08	42	.06	23	-.06
Physical Conditioning	414	**.16**	119	**.24**	63	.12	42	**.34**	23	.30
AIM										
Adjustment	313	**.23**	129	.06	81	.02	35	-.08	24	.12
Physical Conditioning	309	**.23**	125	**.32**	77	**.27**	34	**.41**	24	.34
Lie Scale	322	.07	130	-.02	81	.13	36	**-.40**	24	-.27
RBI										
Achievement	903	**.17**	300	.06	186	-.02	87	.15	60	.16
Fitness Motivation	903	**.31**	300	**.14**	186	.13	87	.11	60	.20
Hostility to Authority	903	**-.15**	300	-.09	186	**-.17**	87	-.06	60	.04
Respect for Authority	903	**.10**	300	-.06	186	-.07	87	-.07	60	-.03
Lie Scale	903	**.14**	300	.10	186	.10	87	-.11	60	.15

Note. Correlations in bold are statistically significant, $p < .05$ (two-tailed). Correlations enclosed in boxes are significantly different from those of non-waivered Soldiers, $p < .05$ (two-tailed).

Table 3.10. Correlations between Predictors and End of Training Adjustment to Army Life for Waivered and Non-Waivered Soldiers Waivers in the TOPS IOT&E Sample

	EOT ALQ: Adjustment to Army Life									
	No Waiver		Any Waiver		Conduct Waiver		Medical Waiver		Other Waiver	
Predictor	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*
AFQT	1,438	**.05**	198	.10	80	.05	89	.06	43	.02
TAPAS										
Can Do Composite	1,363	**.16**	189	.10	74	.04	85	.17	43	.07
Will Do Composite	1,363	**.14**	189	.13	74	.08	85	.21	43	.13
Achievement	1,363	**.18**	189	-.04	74	-.07	85	.08	43	-.14
Non-delinquency	1,363	.04	189	-.09	74	**-.28**	85	.06	43	.10
Physical Conditioning	1,363	**.19**	189	**.20**	74	**.25**	85	.10	43	.25

Note. Correlations in bold are statistically significant, $p < .05$ (two-tailed). Correlations enclosed in boxes are significantly different from those of non-waivered Soldiers, $p < .05$ (two-tailed).

Validity for Predicting IMT Graduation

Table 3.11 presents validities for the prediction of IMT graduation (whether Soldiers graduated or were discharged). Positive relationships indicate that as Soldiers' scores increase on the predictor variables so does their likelihood of graduating. RBI achievement and fitness motivation were less valid predictors of graduation among Soldiers with medical waivers, and the AIM lie scale was significantly and negatively related to graduation among Soldiers with medical waivers.

Table 3.11. Point-Biserial Correlations between Predictors and IMT Graduation Status for Waivered and Non-Waivered Soldiers in the Army Class LV Sample

	IMT Graduation									
	No Waiver		Any Waiver		Conduct Waiver		Medical Waiver		Other Waiver	
Predictor	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*
AFQT	3,522	.01	1074	.02	589	.03	329	.05	294	-.06
TAPAS										
Can Do Composite	1,633	**.05**	602	.05	356	.04	164	.00	168	.10
Will Do Composite	1,633	**.09**	602	**.10**	356	.09	164	-.01	168	.12
Achievement	1,633	.05	602	.01	356	-.01	164	.04	168	.08
Non-delinquency	1,633	.01	602	.01	356	-.03	164	.00	168	.00
Physical Conditioning	1,633	**.08**	602	**.13**	356	**.17**	164	-.01	168	.10
AIM										
Adjustment	1,625	**.11**	651	.05	395	.07	164	-.02	185	-.03
Physical Conditioning	1,609	**.13**	643	**.14**	390	**.13**	161	.06	182	.13
Lie Scale	1,666	.02	667	.00	407	.08	168	**-.17**	187	-.02
RBI										
Achievement	2,653	**.04**	882	.04	493	**.11**	262	**-.17**	241	-.03
Fitness Motivation	2,653	**.14**	882	**.16**	493	**.21**	262	-.01	241	**.19**
Hostility to Authority	2,653	-.02	882	-.02	493	-.06	262	-.01	241	.11
Respect for Authority	2,652	**.04**	882	.02	493	.05	262	-.08	241	-.02
Lie Scale	2,653	.00	882	-.02	493	-.01	262	-.09	241	-.02

Note. Correlations in bold are statistically significant, $p < .05$ (two-tailed). Correlations enclosed in boxes are significantly different from those of non-waivered Soldiers, $p < .05$ (two-tailed). IMT Graduation coded as: Graduated = 1, Discharged = 0.

With respect to Soldiers graduating with or without at least one failure in IMT, TAPAS Physical Conditioning was found to be less valid among waivered Soldiers than among non-waivered Soldiers, although the validity coefficient in the non-waivered sample was weak (r = .07). Note that positive correlations in Table 3.12 indicate higher scores on the predictor are associated with a lower likelihood of failure.

Table 3.12. Point-Biserial Correlations between Predictors and IMT Graduation Status for Waivered and Non-Waivered Soldiers in the TOPS IOT&E Sample

	IMT Graduation w/o Fail									
	No Waiver		Any Waiver		Conduct Waiver		Medical Waiver		Other Waiver	
Predictor	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*
AFQT	3,769	**.03**	604	**.09**	245	.08	255	**.13**	147	.06
TAPAS										
Can Do Composite	3,459	-.02	570	-.01	232	.03	237	.02	142	-.05
Will Do Composite	3,459	-.01	570	-.07	232	-.03	237	-.06	142	-.13
Achievement	3,459	.00	570	.02	232	.08	237	-.02	142	-.04
Non-delinquency	3,459	-.02	570	**-.10**	232	-.06	237	-.05	142	-.15
Physical Conditioning	3,459	**.07**	570	-.02	232	.01	237	.00	142	-.15

Note. Correlations in bold are statistically significant, $p < .05$ (two-tailed). Correlations enclosed in boxes are significantly different from those of non-waivered Soldiers, $p < .05$ (two-tailed). IMT Graduation w/o Fail coded as: Soldier failed at least once = 0, Soldier graduated with no failures = 1.

Validity for Predicting Attrition

Tables 3.13 and 3.14 report estimates of validity for predicting 6-month attrition in the Army Class LV and TOPS IOT&E samples. Results for 12- and 24-month attrition in the Army Class LV sample were very similar to these, and are thus presented in Appendix A in Tables A.7 and A.8. Several scales predict attrition just as well among waivered Soldiers as among non-waivered Soldiers, although validities are typically small in magnitude. However, these estimates still indicate potential utility to help the Army realize cost savings due to reduced attrition. Examples include TAPAS Will Do composite (r = -.09 non-waivered, r = -.10 waivered), TAPAS Physical Conditioning (r = -.09 non-waivered, r = -.13 waivered), AIM Physical Conditioning (r = -.13 non-waivered, r = -.11 waivered), and RBI fitness motivation (r = -.10 non-waivered, r = -.14 waivered). Exceptions to these similar estimates include AIM adjustment, favoring non-waivered Soldiers, and AIM and RBI lie scales, which are positively related to attrition among Soldiers with medical waivers.

Table 3.13. Point-Biserial Correlations between Predictors and 6-month Attrition for Waivered and Non-Waivered Soldiers in the Army Class LV Sample

	6-Month Attrition									
	No Waiver		Any Waiver		Conduct Waiver		Medical Waiver		Other Waiver	
Predictor	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*
AFQT	3,860	-.03	1325	**-.07**	751	-.03	426	**-.11**	307	-.07
TAPAS										
Can Do Composite	1,675	**-.06**	652	-.06	377	-.03	211	-.07	154	-.02
Will Do Composite	1,675	**-.09**	652	**-.10**	377	**-.11**	211	.01	154	-.11
Achievement	1,675	**-.06**	652	-.03	377	.01	211	-.10	154	-.08
Non-delinquency	1,675	-.01	652	-.01	377	.05	211	.00	154	-.05
Physical Conditioning	1,675	**-.09**	652	**-.13**	377	**-.15**	211	-.02	154	-.16
AIM										
Adjustment	1,712	**-.13**	708	-.05	424	**-.10**	213	.04	170	.10
Physical Conditioning	1,694	**-.13**	701	**-.11**	420	**-.11**	210	-.03	164	-.09
Lie Scale	1,751	-.03	724	.03	437	-.03	217	**.18**	170	.00
RBI										
Achievement	3,018	**-.04**	1101	**-.07**	627	**-.10**	344	.06	263	-.08
Fitness Motivation	3,018	**-.10**	1101	**-.14**	627	**-.18**	344	-.02	263	**-.17**
Hostility to Authority	3,018	.03	1101	.00	627	.07	344	-.05	263	**-.15**
Respect for Authority	3,017	-.03	1101	-.02	627	-.04	344	.05	263	.02
Lie Scale	3,018	.01	1101	.02	627	-.01	344	**.13**	263	.05

Note. Correlations in bold are statistically significant, $p < .05$ (two-tailed). Correlations enclosed in boxes are significantly different from those of non-waivered Soldiers, $p < .05$ (two-tailed). 6-month attrition coding: In Service = 0, Separated = 1.

Table 3.14. Point-Biserial Correlations between Predictors and 6-month Attrition for Waivered and Non-Waivered Soldiers in the TOPS IOT&E Sample

	6-Month Attrition									
	No Waiver		Any Waiver		Conduct Waiver		Medical Waiver		Other Waiver	
Predictor	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*
AFQT	3,613	**-.06**	554	-.07	211	**-.18**	244	-.04	142	-.02
TAPAS										
Can Do Composite	3,297	-.02	521	.03	203	-.07	224	.07	135	.03
Will Do Composite	3,297	-.01	521	-.01	203	-.06	224	-.02	135	.03
Achievement	3,297	.00	521	-.03	203	-.12	224	-.06	135	.03
Non-delinquency	3,297	.01	521	.12	203	.08	224	.12	135	.14
Physical Conditioning	3,297	-.07	521	-.09	203	**-.15**	224	-.11	135	-.02

Note. Correlations in bold are statistically significant, $p < .05$ (two-tailed). Correlations enclosed in boxes are significantly different from those of non-waivered Soldiers, $p < .05$ (two-tailed). 6-month attrition coding: In Service = 0, Separated = 1.

This section has focused exclusively on bivariate estimates of criterion-related validity among waivered and non-waivered Soldiers. The following section examines the incremental validity of non-cognitive measures in predicting performance above and beyond the AFQT for waivered and non-waivered Soldiers.

Incremental Validity of Predictor Measures among Waivered and Non-Waivered Soldiers

The following tables present estimates of incremental validity for each non-cognitive scale above AFQT scores in predicting performance outcomes for waivered and non-waivered Soldiers.[11] When interpreting incremental validity results, it is important to consider the relationship between the predictor in the first step of the equation (the AFQT in this case) and the criterion. All else being equal, if the AFQT is more strongly related to the criterion in one sample than in another, this will reduce the opportunity for a predictor entered into the second step of the hierarchical regression equation (i.e., a non-cognitive measure) to explain incremental variance beyond the AFQT. This complication in interpretation is illustrated in Table 3.15. At first glance, it appears that non-cognitive predictors consistently explain larger amounts of incremental variance in JKT scores among waivered Soldiers than among non-waivered Soldiers. This is technically correct; however, the AFQT explains much more variance in JKT scores among non-waivered Soldiers than among waivered Soldiers. As a whole, this results in approximately equivalent multiple correlations between AFQT/non-cognitive predictor combinations and JKT scores among waivered and non-waivered Soldiers. The implications of this are that as long as both types of predictor are used the net result will be roughly equally valid predictions of JKT scores.

Table 3.16 paints a slightly different picture. Non-cognitive measures did not provide incremental validity over the AFQT in predicting JKT scores for either group (waivered, non-waivered) in the TOPS IOT&E sample. Further, AFQT validity was adequate but lower among waivered Soldiers, especially for the MOS-Specific JKT.

[11] Given the pattern of findings for bivariate criterion-related validity estimates reported in the past section, as well as the extremely low sample sizes for Soldiers with criterion data and specific types of waivers, we do not report separate incremental validity results by type of waiver a Soldier received to (a) streamline reporting of results, and (b) to avoid the potential to over-generalize the findings presented herein.

Table 3.15. Incremental Validity Estimates for Predicting Job Knowledge Test Scores among Waivered and Non-Waivered Soldiers in the Army Class LV Sample

	Non-waivered				Waivered			
Predictor	*N*	AFQT Only	AFQT + Predictor	Δ*R*	*N*	AFQT Only	AFQT + Predictor	Δ*R*
				EOT: MOS-Specific JKT				
TAPAS								
Can Do Composite	389	**.47**	**.48**	**.01**	112	**.36**	**.41**	**.05**
Will Do Composite	389	**.47**	**.47**	.00	112	**.36**	**.42**	**.06**
Achievement	389	**.47**	**.47**	.00	112	**.36**	**.41**	**.05**
Non-delinquency	389	**.47**	**.47**	.00	112	**.36**	**.42**	**.05**
Physical Conditioning	389	**.47**	**.47**	.00	112	**.36**	**.37**	.00
AIM								
Adjustment	311	**.43**	**.44**	.00	122	**.41**	**.41**	.00
Physical Conditioning	307	**.43**	**.43**	.00	118	**.41**	**.45**	**.03**
Lie Scale	319	**.42**	**.43**	.00	123	**.41**	**.43**	.02
RBI								
Achievement	863	**.44**	**.44**	.00	279	**.39**	**.39**	.00
Fitness Motivation	863	**.44**	**.44**	.00	279	**.39**	**.39**	.00
Hostility to Authority	863	**.44**	**.44**	.00	279	**.39**	**.41**	**.02**
Respect for Authority	863	**.44**	**.44**	.00	279	**.39**	**.39**	.00
Lie Scale	863	**.44**	**.44**	.00	279	**.39**	**.39**	.00
				IU: Army-Wide JKT				
TAPAS								
Can Do Composite	364	**.27**	**.27**	.00	141	**.22**	**.26**	.04
Will Do Composite	364	**.27**	**.27**	.00	141	**.22**	**.26**	.04
Achievement	364	**.27**	**.29**	**.02**	141	**.22**	**.26**	.04
Non-delinquency	364	**.27**	**.29**	.01	141	**.22**	**.22**	.00
Physical Conditioning	364	**.27**	**.28**	.01	141	**.22**	**.24**	.02
AIM								
Adjustment	370	**.25**	**.25**	.00	148	**.18**	**.24**	**.06**
Physical Conditioning	365	**.24**	**.24**	.00	145	**.20**	.20	.00
Lie Scale	376	**.25**	**.26**	.01	152	**.21**	**.21**	.00
RBI								
Achievement	740	**.23**	**.24**	.01	278	**.28**	**.29**	.01
Fitness Motivation	740	**.23**	**.24**	.01	278	**.28**	**.32**	**.04**
Hostility to Authority	740	**.23**	**.23**	.00	278	**.28**	**.29**	.00
Respect for Authority	740	**.23**	**.23**	.00	278	**.28**	**.30**	.02
Lie Scale	740	**.23**	**.23**	.00	278	**.28**	**.29**	.00

Note. Estimates in bold are statistically significant, $p < .05$ (one-tailed).

Table 3.16. Incremental Validity Estimates for Predicting Job Knowledge Test Scores among Waivered and Non-Waivered Soldiers in the TOPS IOT&E Sample

	Non-waivered				Waivered			
Predictor: TAPAS	*N*	AFQT Only	AFQT + Predictor	Δ*R*	*N*	AFQT Only	AFQT + Predictor	Δ*R*
				EOT: MOS-Specific JKT				
Can Do Composite	1,110	**.38**	**.38**	.00	157	**.23**	**.23**	.00
Will Do Composite	1,110	**.38**	**.38**	.00	157	**.23**	**.23**	.00
Achievement	1,110	**.38**	**.38**	.00	157	**.23**	**.25**	.02
Non-delinquency	1,110	**.38**	**.38**	.00	157	**.23**	**.24**	.01
Physical Conditioning	1,110	**.38**	**.38**	.00	157	**.23**	**.24**	.01
				EOT: Army-Wide JKT				
Can Do Composite	1,333	**.50**	**.50**	.00	183	**.44**	**.44**	.00
Will Do Composite	1,333	**.50**	**.50**	.00	183	**.44**	**.44**	.00
Achievement	1,333	**.50**	**.50**	.00	183	**.44**	**.45**	.00
Non-delinquency	1,333	**.50**	**.50**	.00	183	**.44**	**.45**	.00
Physical Conditioning	1,333	**.50**	**.50**	.00	183	**.44**	**.44**	.00

Note. Estimates in bold are statistically significant, $p < .05$ (one-tailed).

Incremental validity results were much the same among waivered and non-waivered Soldiers in the prediction of average AIT grades (Tables 3.17 and 3.18).

Table 3.17. Incremental Validity Estimates for Predicting Average AIT Grade among Waivered and Non-Waivered Soldiers in the Army Class LV Sample

	EOT: Average AIT Grade							
	Non-waivered				Waivered			
Predictor	*N*	AFQT Only	AFQT + Predictor	Δ*R*	*N*	AFQT Only	AFQT + Predictor	Δ*R*
TAPAS								
Can Do Composite	380	**.33**	**.37**	**.04**	150	**.34**	**.37**	.03
Will Do Composite	380	**.33**	**.36**	**.03**	150	**.34**	**.38**	**.04**
Achievement	380	**.33**	**.38**	**.04**	150	**.34**	**.36**	.02
Non-delinquency	380	**.33**	**.36**	**.02**	150	**.34**	**.36**	.02
Physical Conditioning	380	**.33**	**.33**	.00	150	**.34**	**.34**	.00
AIM								
Adjustment	433	**.32**	**.34**	**.02**	167	**.40**	**.41**	.01
Physical Conditioning	428	**.31**	**.32**	.00	166	**.41**	**.41**	.01
Lie Scale	441	**.32**	**.33**	.01	170	**.41**	**.42**	.01
RBI								
Achievement	492	**.36**	**.36**	.00	203	**.35**	**.36**	.01
Fitness Motivation	492	**.36**	**.36**	.00	203	**.35**	**.35**	.00
Hostility to Authority	492	**.36**	**.37**	.01	203	**.35**	**.37**	.02
Respect for Authority	492	**.36**	**.36**	.00	203	**.35**	**.38**	**.03**
Lie Scale	492	**.36**	**.36**	.00	203	**.35**	**.35**	.00

Note. Estimates in bold are statistically significant, $p < .05$ (one-tailed).

Table 3.18. Incremental Validity Estimates for Predicting Average AIT Grade among Waivered and Non-Waivered Soldiers in the TOPS IOT&E Sample

	EOT: Average AIT Grade							
	Non-waivered				Waivered			
Predictor: TAPAS	*N*	AFQT Only	AFQT + Predictor	Δ*R*	*N*	AFQT Only	AFQT + Predictor	Δ*R*
Can Do Composite	1,999	**.30**	**.30**	.00	267	**.26**	**.27**	.00
Will Do Composite	1,999	**.30**	**.31**	.00	267	**.26**	**.27**	.01
Achievement	1,999	**.30**	**.30**	.00	267	**.26**	**.27**	.00
Non-delinquency	1,999	**.30**	**.31**	.00	267	**.26**	**.28**	.01
Physical Conditioning	1,999	**.30**	**.30**	.00	267	**.26**	**.30**	**.03**

Note. Estimates in bold are statistically significant, $p < .05$ (one-tailed).

In the prediction of APFT scores, Table 3.19 reveals that some relationships were clearly stronger among waivered Soldiers in the Army Class LV sample. For example, Physical Conditioning (TAPAS and AIM) and fitness motivation (RBI) consistently explained more variance in APFT scores among waivered Soldiers than among non-waivered Soldiers. However, results from the TOPS IOT&E sample presented in Table 3.20 for the APFT show that the TAPAS scales provide approximately equivalent incremental validity estimates beyond AFQT among waivered and non-waivered Soldiers.

The incremental validity analyses reported in Tables 3.15—3.20 were performed on continuously scaled criteria, and thus standard hierarchical ordinary least squares (OLS) regressions were performed. Beginning with Table 3.21, several criterion variables are dichotomous (e.g., no disciplinary incidents vs. one or more, IMT graduation, attrition) and thus hierarchical logistic regressions were performed for these data. Statistical significance of incremental validity was tested via the deviance statistic of the difference between model log-likelihoods (*-2 LL*) for a model comprising solely the AFQT versus a model comprising the AFQT and the non-cognitive predictor scale of interest. A statistically significant reduction in *-2 LL* (differences between *-2LL* values are chi-squared distributed), provides evidence of incremental validity for the non-cognitive measure beyond the AFQT. However, this does not provide a standardized index of the magnitude of incremental validity. The magnitude of incremental validity was ascertained by calculating the difference between (a) the point-biserial correlation between the actual dichotomous criterion and predicted probabilities from a model comprising the AFQT only, and (b) the point-biserial correlation between the actual dichotomous criterion and predicted probabilities from a model comprising the AFQT and the non-cognitive predictor scale of interest (e.g., Table 3.21; see also Hosmer & Lemeshow, 2000).

Table 3.19. Incremental Validity Estimates for Predicting APFT Scores (at end of training and in unit) among Waivered and Non-Waivered Soldiers in the Army Class LV Sample

	Non-waivered				Waivered			
Predictor	*N*	AFQT Only	AFQT + Predictor	Δ*R*	*N*	AFQT Only	AFQT + Predictor	Δ*R*
				EOT: APFT				
TAPAS								
Can Do Composite	413	.05	.06	.01	119	.08	.11	.03
Will Do Composite	413	.05	.09	.04	119	.08	.12	.03
Achievement	413	.05	**.12**	**.07**	119	.08	.14	.05
Non-delinquency	413	.05	**.13**	**.08**	119	.08	.17	.09
Physical Conditioning	413	.05	**.24**	**.19**	119	.08	**.51**	**.42**
AIM								
Adjustment	313	.02	.06	.04	129	.05	.05	.00
Physical Conditioning	309	.03	**.24**	**.21**	125	.07	**.40**	**.33**
Lie Scale	321	.05	.10	.05	130	.06	.10	.04
RBI								
Achievement	894	.06	**.14**	**.09**	299	.01	.03	.03
Fitness Motivation	894	.06	**.40**	**.34**	299	.01	**.35**	**.34**
Hostility to Authority	894	.06	.08	.03	299	.01	.09	.08
Respect for Authority	894	.06	.06	.00	299	.01	.01	.00
Lie Scale	894	.06	.07	.01	299	.01	.02	.01
				IU: APFT				
TAPAS								
Can Do Composite	315	.05	.05	.01	119	**.21**	.21	.00
Will Do Composite	315	.05	.06	.02	119	**.21**	**.26**	.05
Achievement	315	.05	.06	.01	119	**.21**	**.28**	**.07**
Non-delinquency	315	.05	.11	.07	119	**.21**	**.26**	.05
Physical Conditioning	315	.05	**.28**	**.24**	119	**.21**	**.46**	**.25**
AIM								
Adjustment	326	.08	.09	.00	127	.16	**.31**	**.15**
Physical Conditioning	323	.08	**.26**	**.18**	124	.16	**.32**	**.15**
Lie Scale	332	.08	.10	.02	130	.16	.17	.01
RBI								
Achievement	668	.02	**.08**	**.06**	249	.07	.14	.07
Fitness Motivation	668	.02	**.20**	**.18**	249	.07	**.37**	**.31**
Hostility to Authority	668	.02	.04	.02	249	.07	.07	.00
Respect for Authority	668	.02	.05	.03	249	.07	.09	.02
Lie Scale	668	.02	.02	.00	249	.07	.11	.05

Note. Estimates in bold are statistically significant, $p < .05$ (one-tailed).

Table 3.20. Incremental Validity Estimates for Predicting APFT Scores among Waivered and Non-Waivered Soldiers in the TOPS IOT&E Sample

	EOT: APFT							
	Non-waivered				Waivered			
Predictor: TAPAS	*N*	AFQT Only	AFQT + Predictor	Δ*R*	*N*	AFQT Only	AFQT + Predictor	Δ*R*
Can Do Composite	1,351	**.08**	**.10**	.01	185	**.15**	**.15**	.00
Will Do Composite	1,351	**.08**	**.10**	**.02**	185	**.15**	**.17**	.03
Achievement	1,351	**.08**	**.12**	**.03**	185	**.15**	**.16**	.02
Non-delinquency	1,351	**.08**	**.12**	**.04**	185	**.15**	**.19**	.04
Physical Conditioning	1,351	**.08**	**.27**	**.19**	185	**.15**	**.27**	**.12**

Note. Estimates in bold are statistically significant, $p < .05$ (one-tailed).

Table 3.21. Incremental Validity Estimates for Predicting End of Training Disciplinary Incidents among Waivered and Non-Waivered Soldiers in the Army Class LV Sample

	EOT ALQ: Disciplinary Incidents							
	Non-waivered				Waivered			
Predictor	*N*	AFQT Only	AFQT + Predictor	Δ*R*	*N*	AFQT Only	AFQT + Predictor	Δ*R*
TAPAS								
Can Do Composite	413	.07	.09	.02	119	.07	.07	.00
Will Do Composite	413	.07	.11	.04	119	.07	.13	.06
Achievement	413	.07	.07	.00	119	.07	.07	.00
Non-delinquency	413	.07	.09	.02	119	.07	.07	.00
Physical Conditioning	413	.07	.07	.00	119	.07	.07	.00
AIM								
Adjustment	313	**.12**	**.12**	.00	129	.09	.19	.10
Physical Conditioning	309	**.11**	**.14**	.03	125	.08	.08	.00
Lie Scale	321	**.12**	**.13**	.01	130	.08	**.21**	**.13**
RBI								
Achievement	901	**.10**	**.10**	.00	299	.06	.08	.02
Fitness Motivation	901	**.10**	**.14**	**.04**	299	.06	.06	.00
Hostility to Authority	901	**.10**	**.11**	.01	299	.06	.06	.00
Respect for Authority	901	**.10**	**.11**	.01	299	.06	.12	.06
Lie Scale	901	**.10**	**.12**	.02	299	.06	.09	.03

Note. Estimates in bold are statistically significant, $p < .05$ (one-tailed). Δ*R* = the difference between (a) the point-biserial correlation between the actual dichotomous criterion and predicted probabilities from a model comprising the AFQT only, and (b) the point-biserial correlation between the actual dichotomous criterion and predicted probabilities from a model comprising the AFQT and the non-cognitive predictor scale of interest

Table 3.21 indicates that only two non-cognitive measures provided incremental validity over the AFQT in predicting disciplinary incidents (none vs. one or more in training) for Soldiers in the waivered and non-waivered Army Class LV samples. These were the AIM lie scale among waivered Soldiers and RBI fitness motivation among non-waivered Soldiers. The AIM lie scale provided greater incremental validity in predicting disciplinary incidents among waivered Soldiers (Δ*R* = .13) than among non-waivered Soldiers (Δ*R* = .01), and RBI fitness motivation provides greater incremental validity in predicting disciplinary incidents among non-waivered Soldiers (Δ*R* = .04) than among waivered Soldiers (Δ*R* = .00).

Table 3.22 presents evidence that several non-cognitive measures provided significant incremental validity beyond the AFQT in predicting in-unit disciplinary incidents among non-waivered Soldiers, while only two non-cognitive measures provided significant incremental validity beyond the AFQT among waivered Soldiers. Nevertheless, part of these differences in statistical significance may simply reflect lower power to detect incremental validity among the waivered Soldiers due to far lower sample sizes among the waivered group relative to the non-waivered group. Indeed, the magnitude of these differences in incremental validity was small, and in many cases incremental validity was actually higher among waivered Soldiers.

Table 3.22. Incremental Validity Estimates for Predicting In-Unit Disciplinary Incidents among Waivered and Non-Waivered Soldiers in the Army Class LV Sample

	IU ALQ: Disciplinary Incidents							
	Non-waivered				Waivered			
Predictor	*N*	AFQT Only	AFQT + Predictor	Δ*R*	*N*	AFQT Only	AFQT + Predictor	Δ*R*
TAPAS								
Can Do Composite	335	**.13**	**.17**	**.04**	123	.16	**.24**	**.08**
Will Do Composite	335	**.13**	**.20**	**.07**	123	.16	.23	.07
Achievement	335	**.13**	**.18**	**.05**	123	.16	.16	.00
Non-delinquency	335	**.13**	**.18**	**.05**	123	.16	**.25**	**.09**
Physical Conditioning	335	**.13**	**.13**	.00	123	.16	.18	.02
AIM								
Adjustment	342	**.13**	**.13**	.00	131	.10	.10	.00
Physical Conditioning	337	**.12**	**.13**	.01	129	.11	.16	.05
Lie Scale	348	**.12**	**.14**	.02	134	.11	.14	.03
RBI								
Achievement	679	.07	.07	.00	252	.03	.05	.02
Fitness Motivation	679	.07	.07	.00	252	.03	.08	.05
Hostility to Authority	679	.07	**.16**	**.09**	252	.03	.11	.08
Respect for Authority	679	.07	**.10**	**.03**	252	.03	.11	.08
Lie Scale	679	.07	.07	.00	252	.03	.09	.06

Note. Estimates in bold are statistically significant, $p < .05$ (one-tailed).

Table 3.23 provides incremental validity estimates for the number of disciplinary incidents in training for the TOPS IOT&E sample. In this sample, the AFQT did a better job predicting the criterion among waivered Soldiers whereas the non-cognitive measures did a better job explaining more variance in the criterion among non-waivered Soldiers. As alluded to previously, it is likely that sampling error is obscuring these results, especially when comparing sample sizes based on several hundred Soldiers to sample sizes of less than one hundred, as is the case here.

Table 3.23. Incremental Validity Estimates for Predicting Disciplinary Incidents among Waivered and Non-Waivered Soldiers in the TOPS IOT&E Sample

	EOT ALQ: Disciplinary Incidents							
	Non-waivered				Waivered			
Predictor: TAPAS	*N*	AFQT Only	AFQT + Predictor	Δ*R*	*N*	AFQT Only	AFQT + Predictor	Δ*R*
Can Do Composite	668	.03	.07	.04	83	.19	.20	.01
Will Do Composite	668	.03	**.10**	**.07**	83	.19	.19	.00
Achievement	668	.03	**.13**	**.10**	83	.19	.19	.00
Non-delinquency	668	.03	.04	.01	83	.19	.19	.00
Physical Conditioning	668	.03	.07	.04	83	.19	.19	.00

Note. Estimates in bold are statistically significant, $p < .05$ (one-tailed).

Table 3.24 provides evidence that both the AFQT and several non-cognitive measures (e.g., all five RBI scales) explain more variance and incremental variance in perceptions of adjustment to Army life among non-waivered Soldiers than waivered Soldiers. However, in a few cases other non-cognitive predictors (e.g., TAPAS-Physical Conditioning and AIM-Physical

Conditioning) were more predictive of this criterion among waivered Soldiers. Incremental validity estimates for predicting adjustment to Army life in the TOPS IOT&E sample are presented in Table 3.25 and appear stronger for non-waivered Soldiers.

Table 3.24. Incremental Validity Estimates for Predicting End of Training Adjustment to Army Life among Waivered and Non-Waivered Soldiers in the Army Class LV Sample

	EOT ALQ: Adjustment to Army Life							
	Non-waivered				Waivered			
Predictor	*N*	AFQT Only	AFQT + Predictor	Δ*R*	*N*	AFQT Only	AFQT + Predictor	Δ*R*
TAPAS								
Can Do Composite	413	**.12**	**.20**	**.09**	119	.04	.13	.09
Will Do Composite	413	**.12**	**.18**	**.07**	119	.04	.16	.12
Achievement	413	**.12**	**.22**	**.10**	119	.04	.17	.12
Non-delinquency	413	**.12**	**.12**	.00	119	.04	.06	.01
Physical Conditioning	413	**.12**	**.20**	**.09**	119	.04	**.25**	**.21**
AIM								
Adjustment	313	**.15**	**.25**	**.10**	129	.01	.06	.05
Physical Conditioning	309	**.15**	**.27**	**.12**	125	.00	**.33**	**.32**
Lie Scale	321	**.14**	**.17**	.03	130	.01	.02	.01
RBI								
Achievement	901	.06	**.18**	**.12**	299	.09	.10	.02
Fitness Motivation	901	.06	**.32**	**.26**	299	.09	**.16**	**.08**
Hostility to Authority	901	.06	**.15**	**.09**	299	.09	.11	.03
Respect for Authority	901	.06	**.12**	**.06**	299	.09	.10	.02
Lie Scale	901	.06	**.17**	**.11**	299	.09	**.15**	**.07**

Note. Estimates in bold are statistically significant, $p < .05$ (one-tailed).

Table 3.25. Incremental Validity Estimates for Predicting Adjustment to Army Life among Waivered and Non-Waivered Soldiers in the TOPS IOT&E Sample

	EOT ALQ: Adjustment to Army Life							
	Non-waivered				Waivered			
Predictor: TAPAS	*N*	AFQT Only	AFQT + Predictor	Δ*R*	*N*	AFQT Only	AFQT + Predictor	Δ*R*
Can Do Composite	1,363	.04	**.16**	**.12**	189	.10	.13	.03
Will Do Composite	1,363	.04	**.15**	**.10**	189	.10	.17	.06
Achievement	1,363	.04	**.18**	**.14**	189	.10	.11	.01
Non-delinquency	1,363	.04	.06	.02	189	.10	.13	.03
Physical Conditioning	1,363	.04	**.19**	**.15**	189	.10	**.22**	**.12**

Note. Estimates in bold are statistically significant, $p < .05$ (one-tailed).

Table 3.26 shows that several non-cognitive measures provided significant incremental validity over the AFQT in predicting IMT graduation for Soldiers with and without waivers. These included the TAPAS Will Do Composite, Physical Conditioning (TAPAS and AIM), and RBI fitness motivation. The magnitude of incremental validities are either the same or slightly higher for all four variables for waivered Soldiers. However, some validity estimates for other non-cognitive measures were stronger for non-waivered Soldiers (e.g., AIM adjustment).

Table 3.26. Incremental Validity Estimates for Predicting IMT Graduation Status among Waivered and Non-Waivered Soldiers in the Army Class LV Sample

	IMT Graduation							
	Non-waivered				Waivered			
Predictor	*N*	AFQT Only	AFQT + Predictor	Δ*R*	*N*	AFQT Only	AFQT + Predictor	Δ*R*
TAPAS								
Can Do Composite	1,622	.00	**.06**	**.06**	600	.02	.05	.03
Will Do Composite	1,622	.00	**.09**	**.09**	600	.02	**.10**	**.08**
Achievement	1,622	.00	.05	.05	600	.02	.02	.00
Non-delinquency	1,622	.00	.01	.01	600	.02	.02	.00
Physical Conditioning	1,622	.00	**.09**	**.09**	600	.02	**.13**	**.11**
AIM								
Adjustment	1,609	.01	**.12**	**.11**	647	.01	.06	.05
Physical Conditioning	1,594	.01	**.13**	**.12**	639	.01	**.13**	**.12**
Lie Scale	1,649	.01	.03	.02	663	.01	.01	.00
RBI								
Achievement	2,641	.01	.04	.03	875	.03	.05	.02
Fitness Motivation	2,641	.01	**.16**	**.15**	875	.03	**.19**	**.16**
Hostility to Authority	2,641	.01	.02	.01	875	.03	.04	.01
Respect for Authority	2,640	.01	**.04**	**.03**	875	.03	.04	.01
Lie Scale	2,641	.01	.01	.00	875	.03	.04	.01

Note. Estimates in bold are statistically significant, $p < .05$ (one-tailed).

Table 3.27 reports results regarding Soldiers making it through IMT without a failure (for academic or any other reason). TAPAS non-delinquency provided significant incremental validity beyond the AFQT among waivered Soldiers and TAPAS Physical Conditioning provided significant incremental validity beyond the AFQT among non-waivered Soldiers.

Table 3.27. Incremental Validity Estimates for Predicting IMT Failure among Waivered and Non-Waivered Soldiers in the TOPS IOT&E Sample

	IMT Graduation w/o Fail							
	Non-waivered				Waivered			
Predictor: TAPAS	*N*	AFQT Only	AFQT + Predictor	Δ*R*	*N*	AFQT Only	AFQT + Predictor	Δ*R*
Can Do Composite	3,459	.03	.04	.01	570	**.09**	**.10**	.01
Will Do Composite	3,459	.03	.03	.00	570	**.09**	**.12**	.03
Achievement	3,459	.03	.03	.00	570	**.09**	**.09**	.00
Non-delinquency	3,459	.03	.03	.00	570	**.09**	**.12**	**.03**
Physical Conditioning	3,459	.03	**.07**	**.04**	570	**.09**	**.10**	.01

Note. Estimates in bold are statistically significant, $p < .05$ (one-tailed).

Attrition was the last variable examined with respect to incremental validity. As stated previously, results for 6-month attrition are reported here and results for 12- and 24-month attrition are reported in Appendix A (see Tables A.9 and A.10). Several non-cognitive measures provided incremental validity among waivered and non-waivered Soldiers in the Army Class LV sample (Table 3.28) and in the TOPS IOT&E sample (Table 3.29). Physical Conditioning consistently provided incremental validity across groups and samples. Incremental validity was

typically higher among non-waivered Soldiers in the Army Class LV Sample and higher among waivered Soldiers in the TOPS IOT&E Sample.

Table 3.28. Incremental Validity Estimates for Predicting 6-month Attrition among Waivered and Non-Waivered Soldiers in the Army Class LV Sample

	6-month Attrition							
	Non-waivered				Waivered			
Predictor	*N*	AFQT Only	AFQT + Predictor	Δ*R*	*N*	AFQT Only	AFQT + Predictor	Δ*R*
TAPAS								
Can Do Composite	1,668	.02	**.07**	**.05**	652	.06	.06	.00
Will Do Composite	1,668	.02	**.10**	**.08**	652	.06	**.11**	**.05**
Achievement	1,668	.02	**.07**	**.05**	652	.06	.06	.00
Non-delinquency	1,668	.02	.03	.01	652	.06	.06	.00
Physical Conditioning	1,668	.02	**.10**	**.08**	652	.06	**.14**	**.08**
AIM								
Adjustment	1,700	.04	**.13**	**.09**	706	.03	.06	.03
Physical Conditioning	1,683	.04	**.14**	**.10**	699	.04	**.11**	**.07**
Lie Scale	1,739	.04	.06	.02	722	.04	.05	.01
RBI								
Achievement	3,008	.03	**.05**	**.02**	1,097	**.08**	**.10**	**.02**
Fitness Motivation	3,008	.03	**.11**	**.08**	1,097	**.08**	**.18**	**.10**
Hostility to Authority	3,008	.03	.04	.01	1,097	**.08**	**.08**	.00
Respect for Authority	3,007	.03	.05	.02	1,097	**.08**	**.08**	.00
Lie Scale	3,008	.03	.03	.00	1,097	**.08**	**.08**	.00

Note. Estimates in bold are statistically significant, $p < .05$ (one-tailed).

Table 3.29. Incremental Validity Estimates for Predicting 6-month Attrition among Waivered and Non-Waivered Soldiers in the TOPS IOT&E Sample

	6-month Attrition							
	Non-waivered				Waivered			
Predictor: TAPAS	*N*	AFQT Only	AFQT + Predictor	Δ*R*	*N*	AFQT Only	AFQT + Predictor	Δ*R*
Can Do Composite	3,297	**.07**	**.07**	.00	521	.07	.09	.02
Will Do Composite	3,297	**.07**	**.07**	.00	521	.07	.07	.00
Achievement	3,297	**.07**	**.07**	.00	521	.07	.08	.01
Non-delinquency	3,297	**.07**	**.07**	.00	521	.07	**.14**	**.07**
Physical Conditioning	3,297	**.07**	**.10**	**.03**	521	.07	**.13**	**.06**

Note. Estimates in bold are statistically significant, $p < .05$ (one-tailed).

Summary of Validity and Incremental Validity Findings

The discussion of validity focused primarily on highlighting similarities and differences in relationships between specific non-cognitive measures and criteria among waivered and non-waivered Soldiers, but not on summary findings. To objectively examine investigation-level findings, summary statistics were calculated using the results presented in Tables 3.1—3.29 as input. In order to calculate these summary statistics, we first distinguished between positive

outcomes (e.g., JKT, APFT, adjustment to Army life, AIT grades, and IMT graduation) and negative outcomes (e.g., disciplinary incidents, attrition). Next, we distinguished between predictors for which higher scores imply negative attributes (e.g., lie scales, hostility to authority) and predictors for which higher scores imply positive attributes (e.g., achievement, fitness motivation). Once these distinctions were made, we then counted the number of predictor-criterion pairs for which the predictor in question exhibited stronger evidence of validity among either waivered or non-waivered Soldiers – accounting for differences in scaling and valance of predictors and criteria noted above.

Of 188 pairs of criterion-related validity estimates (including AFQT) among waivered and non-waivered Soldiers reported in Tables 3.1—3.14, 92 exhibited greater evidence of validity for waivered Soldiers (49%), 84 exhibited greater evidence of validity for non-waivered Soldiers (45%), and 12 (6%) exhibited no discernible validity difference between groups (identical to two decimal places). The average difference when validity was higher among waivered Soldiers was .07 (trimmed 95% range: .01 to .20). The average difference when validity was higher among non-waivered Soldiers was also .07 (trimmed 95% range: .01 to .16). Overall, the average difference in magnitude between criterion-related validity estimates was essentially zero.

Remember that the statistical significance of the difference between each bivariate validity estimate was tested across samples of Soldiers with no waiver, any waiver, and conduct, medical and other waivers. Significantly different validity estimates of Soldiers with waivers compared to Soldiers with no waivers were enclosed in boxes in Tables 3.1—3.14. Of the 188 pairs of validity estimates among non-waivered Soldiers and Soldiers with any type of waiver, only 15 (8%) of these were significantly different from one another. Of 564 comparisons of non-waivered Soldiers with Soldiers having conduct, medical and other waivers, only 50 (9%) of these were significantly different from the non-waivered sample. Note that these percentages of significant differences are only slightly above the common convention regarding finding relationships by chance, i.e., $p < .05$.[12]

Of 170 pairs of hierarchical regressions examining incremental validity of non-cognitive measures above the AFQT among waivered and non-waivered Soldiers in Tables 3.15—3.29, 69 exhibited greater evidence of incremental validity for waivered Soldiers (41%), 60 exhibited greater evidence of incremental validity for non-waivered Soldiers (35%), and 41 (24%) exhibited no discernible incremental validity difference between groups (identical to two decimal places). The average difference when incremental validity was higher among waivered Soldiers was .04 (trimmed 95% range: .01 to .13). The average difference when incremental validity was higher among non-waivered Soldiers was also .04 (trimmed 95% range: .01 to .10). Overall, the

[12] We expect that in actuality greater than 5% of these would be significant by chance due to dependencies in the data, i.e., conduct, medical, and other waiver analyses are necessarily related to analyses comparing Soldiers with any waiver to Soldiers without a waiver. This dependency should inflate the percentage of significant relationships found by chance. Although False Discovery Rate Analysis (Benjamini & Yekutieli, 2001) could have been used to determine the exact percentage, the application of this method was beyond the scope of this research investigation. However, we feel that the percentages found (8% and 9%) are close to what would be expected to occur by chance alone.

average difference between incremental validity estimates among waivered and non-waivered Soldiers was zero.

In sum, the set of ARI non-cognitive measures examined appear to be valid among both waivered and non-waivered Soldiers. Although there are differences in validity, these differences are small. If anything, as a whole, the non-cognitive measures appear to be very slightly more valid among waivered Soldiers, although it depends upon the specific measure in question.

Chapter 4: Subgroup Difference Analyses

Besides validity, another important factor to consider when evaluating predictor measures for use in the waiver approval process (or any selection process) is differential prediction across demographic subgroups (e.g., gender and race). In light of sample size, and in turn power concerns, we were not able to perform differential prediction analyses (e.g., per Cleary's 1968 model of test bias) as part of this effort, but instead examined subgroup differences on ARI's non-cognitive predictor measures for waivered Soldiers.[13] Of particular interest was how the magnitude of these differences compared to subgroup differences found for non-waivered Soldiers. As with the previous chapter, any differences found between waivered and non-waivered Soldiers in this regard might signify that the ARI non-cognitive measures are functioning differently for waivered Soldiers.

Gender Differences

Tables 4.1 and 4.2 provide a side-by-side comparison of the magnitude of gender differences on predictor measures for waivered and non-waivered Soldiers in the Army Class LV and TOPS IOT&E samples, respectively.[14] Positive Cohen's *d* values in these tables indicate that females scored higher than males on the given predictor, whereas negative values indicate males scored higher. The "difference" column reflects the difference in Cohen's *d* values for waivered vs. non-waivered groups, and provides a direct indicator of how much larger (positive values) or smaller (negative values) gender differences were for waivered Soldiers compared to non-waivered Soldiers.

The results in Tables 4.1 and 4.2 largely reveal trivial differences between waivered and non-waivered groups. The largest differences were found for AIM Physical Conditioning and RBI Hostility to Authority in the Army Class LV sample. Specifically, AIM Physical Conditioning exhibited almost no gender differences among waivered Soldiers, but exhibited small to moderate gender differences (males scoring higher than females) among non-waivered Soldiers. In contrast, RBI Hostility to Authority exhibited small to moderate gender differences among non-waivered Soldiers, but exhibited large gender differences among waivered Soldiers (males scoring higher than females in each group). This makes sense given that there are higher rates of disciplinary issues among men than women. However, in both cases, these differences do not have serious practical implications. To be clear, there *would be* reason for concern if larger gender differences were found in the waivered group relative to the non-waivered group

[13] Though the sample sizes underlying the subgroup analyses are fairly sizable, it is important to note that these analyses included all waivered Soldiers with data on the given predictor. The number of waivered Soldiers with data on the given predictor *and* criterion data (required for performing differential prediction analyses) was far smaller (see Chapter 3).

[14] To streamline and focus the presentation of results, we do not report means, standard deviations and sample sizes by gender in these tables. This information has been provided in Appendix A for the interested reader (see Tables A.11 – A.16). Also given the relatively small differences between waivered and non-waivered Soldiers found in this chapter and Chapter 2, as well as small sample sizes for gender × waiver type combinations, we chose not to discuss gender differences by waiver type in this report. Though these analyses were conducted as part of the project and provided in Appendix A (see Tables A.13 – A.16), they also tended to reveal small, practically insignificant differences between waivered and non-waivered groups.

and the direction of the gender differences was such that females scored lower than males on a positively valued attribute (e.g., Achievement, Fitness Motivation) or higher than males on a negatively valued attribute (e.g., Hostility to Authority, Lie Scale) in the waivered group. These conditions do not describe either case where larger gender differences were found between waivered and non-waivered groups.

Table 4.1. Magnitude of Gender Differences on Predictor Measures for Waivered and Non-waivered Soldiers in the Army Class LV Sample

Predictor	Waivered d_{FM}	Non-waivered d_{FM}	Difference (W-NW)
AFQT	-0.27	-0.21	-0.06
TAPAS			
Can Do Composite	-0.04	0.03	-0.07
Will Do Composite	0.01	-0.02	0.03
Achievement	0.15	0.10	0.05
Non-delinquency	0.38	0.37	0.01
Physical Conditioning	-0.25	-0.31	0.06
AIM			
Adjustment	0.02	-0.06	0.08
Physical Conditioning	0.02	-0.36	0.38
Lie Scale	-0.22	-0.22	0.00
RBI			
Achievement	0.51	0.40	0.11
Fitness Motivation	-0.71	-0.73	0.02
Hostility to Authority	-0.74	-0.47	-0.27
Respect for Authority	0.40	0.28	0.12
Lie Scale	0.13	0.10	0.03

Note. d_{FM} = Cohen's *d* effect size for Female-Male mean difference. Effect sizes calculated as (Female group mean - Male group mean) / pooled *SD* across groups. Difference (W-NW) = d_{FM} for Waivered group - d_{FM} for Non-waivered group.

Table 4.2. Magnitude of Gender Differences on Predictor Measures for Waivered and Non-waivered Soldiers in the TOPS IOT&E Sample

Predictor	Waivered d_{FM}	Non-waivered d_{FM}	Difference (W-NW)
AFQT	-0.24	-0.23	-0.01
TAPAS			
Can Do Composite	0.06	-0.08	0.14
Will Do Composite	-0.06	-0.10	0.04
Achievement	0.10	-0.01	0.11
Non-delinquency	0.15	0.15	0.00
Physical Conditioning	-0.43	-0.39	-0.04

Note. d_{FM} = Cohen's *d* effect size for Female-Male mean difference. Effect sizes calculated as (Female group mean - Male group mean) / pooled *SD* across groups. Difference (W-NW) = d_{FM} for Waivered group - d_{FM} for Non-waivered group.

Race/Ethnicity Differences

Tables 4.3 and 4.4 provide a side-by-side comparison of the magnitude of race/ethnicity differences on predictor measures for waivered and non-waivered Soldiers in the Army Class LV and TOPS IOT&E samples, respectively.[15] Positive Cohen's *d* values in these tables indicate that Blacks (Hispanics) scored higher than Whites (White Non-Hispanics) on the given predictor, whereas negative values indicate Whites (White Non-Hispanics) scored higher. The "difference" column reflects the difference in Cohen's *d* values for waivered vs. non-waivered groups, and provides a direct indicator of how much larger (positive values) or smaller (negative values) race/ethnicity differences were for waivered Soldiers compared to non-waivered Soldiers.

Table 4.3. Magnitude of Race/Ethnicity Differences on Predictor Measures for Waivered and Non-waivered Soldiers in the Army Class LV Sample

	Black-White *d*			Hispanic-White Non-Hispanic *d*		
Predictor	Waivered	Non-waivered	Difference (W-NW)	Waivered	Non-waivered	Difference (W-NW)
AFQT	-0.63	-0.64	0.01	-0.34	-0.40	0.06
TAPAS						
Can Do Composite	-0.11	-0.05	-0.06	0.01	-0.11	0.12
Will Do Composite	0.00	-0.04	0.04	0.10	-0.07	0.17
Achievement	-0.19	-0.07	-0.12	0.08	-0.11	0.19
Non-delinquency	0.10	0.00	0.10	-0.19	-0.10	-0.09
Physical Conditioning	0.00	0.05	-0.05	0.24	0.01	0.23
AIM						
Adjustment	0.11	0.09	0.02	0.19	0.13	0.06
Physical Conditioning	0.08	0.09	-0.01	0.13	0.04	0.09
Lie Scale	-0.09	0.21	-0.30	0.15	0.38	-0.23
RBI						
Achievement	0.42	0.36	0.06	0.06	0.14	-0.08
Fitness Motivation	-0.03	-0.01	-0.02	0.05	0.02	0.03
Hostility to Authority	-0.31	0.06	-0.37	-0.12	0.02	-0.14
Respect for Authority	0.25	0.13	0.12	-0.03	0.08	-0.11
Lie Scale	0.35	0.24	0.11	0.31	0.34	-0.03

Note. *d* = Cohen's *d* effect size for racial/ethnic subgroup mean differences. Effect sizes calculated as (mean of Black/Hispanic group - mean of White/White-Non Hispanic group) / pooled *SD* across groups being compared. Difference (W-NW) = *d* for Waivered group - *d* for Non-waivered group.

[15] Once again, to streamline and focus the presentation of results, we do not report means, standard deviations and sample sizes by race/ethnicity in these tables. This information has been provided in Appendix A for the interested reader (see Tables A.17 – A.18). Also, given the relatively small differences between waivered and non-waivered Soldiers found in this chapter and Chapter 2, as well as small sample sizes for race/ethnic group × waiver type combinations, we chose not to discuss race/ethnicity differences by waiver type in this report. Though these analyses were conducted as part of the project and provided in Appendix A (see Tables A.17 – A.22), they also tended to reveal small, practically insignificant differences between waivered and non-waivered groups.

Table 4.4. Magnitude of Race/Ethnicity Differences on Predictor Measures for Waivered and Non-waivered Soldiers in the TOPS IOT&E Sample

	Black-White *d*			Hispanic-White Non-Hispanic *d*		
Predictor	Waivered	Non-waivered	Difference (W-NW)	Waivered	Non-waivered	Difference (W-NW)
AFQT	-0.66	-0.61	-0.05	-0.59	-0.72	0.13
TAPAS						
Can Do Composite	-0.07	-0.07	0.00	-0.08	-0.19	0.11
Will Do Composite	-0.07	-0.07	0.00	-0.13	-0.15	0.02
Achievement	-0.17	-0.09	-0.08	-0.06	-0.10	0.04
Non-delinquency	0.16	0.05	0.11	-0.08	-0.10	0.02
Physical Conditioning	-0.26	-0.21	-0.05	-0.09	-0.12	0.03

Note. *d* = Cohen's *d* effect size for racial/ethnic subgroup mean differences. Effect sizes calculated as (mean of Black/Hispanic group - mean of White/White-Non Hispanic group) / pooled *SD* across groups being compared. Difference (W-NW) = *d* for Waivered group - *d* for Non-waivered group.

The results in Tables 4.3 and 4.4 reveal trivial differences between waivered and non-waivered groups. The largest differences were found for RBI Hostility to Authority and the AIM Lie Scale in the Army Class LV sample. Specifically, RBI Hostility to Authority exhibited moderate Black-White differences among waivered Soldiers (Whites scoring higher than Blacks), but exhibited almost no Black-White differences among non-waivered Soldiers. In contrast, the AIM Lie Scale exhibited small negative Black-White differences among waivered Soldiers, but exhibited small positive Black-White differences among non-waivered Soldiers. As was the case with the pattern of gender differences reported in the previous section, in both of these cases, these differences do not have serious practical implications. To be clear, there *would be* reason for concern if larger race/ethnicity differences were found in the waivered group relative to the non-waivered group *and* the direction of the race/ethnicity differences was such that Blacks (Hispanics) scored lower than Whites (White Non-Hispanics) on a positively valued attribute or higher than Whites (White Non-Hispanics) on a negatively valued attribute in the waivered group. Again, these conditions do not describe either case where larger race/ethnicity differences were found between waivered and non-waivered groups.

Chapter 5: Summary and Recommendations[16]

This chapter summarizes our conclusions from the analyses in this research, and outlines our recommendations for future research in this area.

The results of the Army Class and TOPS IOT&E projects demonstrated that ARI's non-cognitive measures (specifically, the TAPAS, the AIM, and the RBI) have the potential to enhance new Soldier selection. The current research addressed two important issues that will impact future operational use of those measures. First, it will be important to know whether those same measures retain their validity when used for Soldiers who require waivers to enter the Army. Second, assuming those measures retain their validity, it will be important to know whether the scales that are most valid for predicting criteria for Soldiers in general are also the most valid scales for predicting criteria for Soldiers with waivers.

The analyses documented in this report evaluated the criterion-related validity of the TAPAS, AIM, and RBI for predicting performance, attitudinal, and retention criteria for Soldiers who required waivers for entry. We evaluated the prediction provided by each instrument in isolation. We also evaluated the prediction provided by each instrument beyond that provided by the AFQT. Finally, to the extent sample sizes permitted, we also examined the magnitude of differences between different subgroups (defined by race/ethnicity and gender) for Soldiers with and without waivers.

Relative Standing of Soldiers with Waivers to Soldiers without Waivers on Key Measures

Chapter 2 compared the relative standing of Soldiers with waivers to Soldiers without waivers on each non-cognitive measure and on each criterion used in the research. Overall, the results indicated that the profile of waivered and non-waivered Soldiers on the predictors was very similar. Similarly, the results showed few differences between the standing of waivered and non-waivered Soldiers on key criteria. Supplemental analyses compared non-waivered Soldiers to three other groups of Soldiers, namely: (a) conduct waiver recipients, (b) medical waiver recipients, and (c) recipients of other types of waivers. These result revealed some slightly larger differences in the case of some non-cognitive measures and some criteria, but the few differences found were only small to moderate in magnitude. Where differences were found, they tended to be in favor of Soldiers with waivers.

Relative Validity of Non-cognitive Measures for Soldiers with Waivers

Chapter 3 addressed the criterion-related validity of each non-cognitive measure for predicting multiple performance, attitudinal, and retention criteria. The specific criteria used included measurements taken both during initial military training and while in-unit. The training criteria included MOS-specific and Army-wide job knowledge tests, average AIT grade, APFT score, measures of adjustment to Army life and disciplinary incidents, failures of any type, and

[16] We wish to recognize Dr. William J. Strickland of HumRRO for drafting the summary reflected in this chapter and the executive summary of this report.

graduation. The in-unit criteria included an Army-Wide job knowledge test, APFT score, and a measure of disciplinary incidents. In addition, attrition at 6 months, 12 months, and 24 months was examined. In each case, the criterion-related validity when each non-cognitive measure was used to predict each criterion for Soldiers with waivers was compared to the same validity estimates for Soldiers without waivers. Across all these comparisons, differences in validity were infrequent and minor. The same pattern held for both individual validity estimates and for the incremental validity obtained when each non-cognitive measure was added to the AFQT for predicting each criterion.

Validity of Non-cognitive Measures by Subgroup

Besides validity, another important factor to consider when evaluating predictor measures for use in the waiver approval process (or any selection process) pertains to differential prediction across demographic subgroups (e.g., gender, race). Of particular interest was how the magnitude of these differences compared to subgroup differences found for Soldiers without waivers. The concern is that any differences found between waivered and non-waivered Soldiers might signify that the ARI non-cognitive measures are functioning differently for Soldiers with waivers. Due to the sample size (and, in turn, power concerns), we were unable to perform differential prediction analyses (e.g., per Cleary's 1968 model of test bias) as part of this effort. Instead, in Chapter 4 we examined subgroup differences on ARI's non-cognitive predictor measures for waivered Soldiers and compared those differences to results for Soldiers without waivers. The results revealed largely trivial differences between waivered and non-waivered groups for predictors by gender. Similarly, the results revealed only trivial differences between waivered and non-waivered groups for predictors by race/ethnic group.

Conclusions and Recommendations

The extensive analyses conducted in this effort provide evidence that ARI's non-cognitive measures are as valid for Soldiers with waivers as they are for Soldiers without waivers. Although differences in validity do appear, these differences are small. If anything, as a whole, these non-cognitive measures appear to be very slightly more valid for Soldiers with waivers, although it depends upon the specific measure in question.

The work described in this report will help the Army to better understand the potential of ARI's non-cognitive measures to facilitate the waiver approval process. Given the general lack of specific, formal guidance provided to waiver approval authorities for making waiver decisions, the use of non-cognitive measures could provide a potentially valuable, standardized source of information for making or contributing to waiver decisions.

Based on the overall results presented here, we recommend that any non-cognitive screening system that ARI develops using the measures available here be used for all non-prior service applicants, whether or not those applicants require a waiver for entry into the Army. Note that we provide no recommendation about appropriate minimum scores on any of these measures, nor on whether those minimum scores should be stricter for applicants who require waivers. Future research to answer those questions is needed before these measures could be used operationally to make selection decisions.

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Appendix A

Table A.1. Comparison of Soldiers with Different Types of Waivers to Non-waivered Soldiers on Predictors in the Army Class LV Sample

				Non-waivered			Conduct Waiver			Medical Waiver			Other Waivers		
Predictor	d_{CW}	d_{MW}	d_{OW}	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*
AFQT	0.17	0.21	0.07	5,236	55.24	19.46	900	58.47	17.82	540	59.33	19.83	462	56.56	18.71
TAPAS															
Can Do Composite	0.06	0.14	0.03	2,224	-0.47	1.79	450	-0.37	1.74	258	-0.22	1.79	238	-0.42	1.83
Will Do Composite	0.04	0.16	0.05	2,224	0.04	1.90	450	0.12	1.84	258	0.34	1.83	238	0.12	1.87
Achievement	0.10	0.13	0.00	2,224	0.16	0.63	450	0.22	0.71	258	0.24	0.64	238	0.16	0.68
Non-delinquency	-0.23	-0.01	0.05	2,224	0.11	0.65	450	-0.03	0.56	258	0.10	0.71	238	0.14	0.60
Physical Conditioning	0.11	0.07	-0.11	2,224	0.11	0.71	450	0.19	0.72	258	0.16	0.77	238	0.04	0.67
AIM															
Adjustment	-0.07	0.09	0.08	2,281	1.27	0.29	505	1.25	0.28	270	1.30	0.29	256	1.29	0.30
Physical Conditioning	0.08	0.14	0.02	2,260	1.18	0.34	499	1.21	0.34	267	1.23	0.32	251	1.19	0.32
Lie Scale	-0.06	-0.08	-0.04	2,336	0.16	0.17	521	0.15	0.17	277	0.15	0.17	259	0.16	0.17
RBI															
Achievement	-0.09	-0.02	0.08	4,090	3.54	0.58	752	3.49	0.57	435	3.53	0.56	392	3.58	0.57
Fitness Motivation	0.10	-0.01	-0.14	4,090	3.28	0.68	752	3.35	0.66	435	3.27	0.69	392	3.19	0.69
Hostility to Authority	0.36	-0.03	-0.11	4,090	2.50	0.66	752	2.73	0.62	435	2.48	0.62	392	2.43	0.63
Respect for Authority	-0.05	-0.02	0.03	4,089	3.51	0.69	752	3.47	0.70	435	3.49	0.67	392	3.52	0.69
Lie Scale	-0.07	-0.06	0.12	4,090	0.10	0.15	752	0.09	0.15	435	0.09	0.14	392	0.12	0.16

Note. d_{CW} = Cohen's *d* effect size for Conduct - Non-waivered mean difference. d_{MW} = Cohen's *d* effect size for Medical - Non-waivered mean difference. d_{OW} = Cohen's *d* effect size for Other waivered (i.e., Dependency, Drug Involvement Not Considered a Law Violation, and Administrative) - Non-waivered mean difference. Effect sizes calculated as (mean of mean of Waivered group - mean of Non-waivered group) / pooled *SD* across groups.

Table A.2. Comparison of Soldiers with Different Types of Waivers to Non-waivered Soldiers on Predictors in the TOPS IOT&E Sample

				Non-waivered			Conduct Waiver			Medical Waiver			Other Waivers		
Predictor	d_{CW}	d_{MW}	d_{OW}	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*
AFQT	0.09	0.14	0.16	17,179	61.41	20.84	894	63.24	19.51	1,238	64.31	20.80	639	64.92	21.96
TAPAS															
Can Do Composite	0.13	0.09	0.37	16,298	0.04	0.98	855	0.18	0.99	1,176	0.13	1.00	613	0.40	0.95
Will Do Composite	0.03	0.05	0.23	16,298	0.03	1.00	855	0.06	1.02	1,176	0.08	1.00	613	0.25	0.95
Achievement	0.21	0.07	0.42	16,298	-0.02	1.00	855	0.20	1.00	1,176	0.05	1.00	613	0.39	0.93
Non-delinquency	-0.10	0.03	0.19	16,298	0.04	0.99	855	-0.06	0.97	1,176	0.07	0.98	613	0.23	0.98
Physical Conditioning	0.08	-0.02	-0.26	16,298	0.00	1.00	855	0.08	0.99	1,176	-0.02	1.00	613	-0.26	0.98

Note. d_{CW} = Cohen's *d* effect size for Conduct - Non-waivered mean difference. d_{MW} = Cohen's *d* effect size for Medical - Non-waivered mean difference. d_{OW} = Cohen's *d* effect size for Other waivered (i.e., Dependency, Drug Involvement Not Considered a Law Violation, and Administrative) - Non-waivered mean difference. Effect sizes calculated as (mean of Waivered group - mean of Non-waivered group) / pooled *SD* across groups.

Table A.3. Comparison of Soldiers with Different Types of Waivers to Non-waivered Soldiers on Continuously-Scaled Criterion Measures in the Army Class LV Sample

				Non-waivered			Conduct Waiver			Medical Waiver			Other Waivers		
Criterion	d_{CW}	d_{MW}	d_{OW}	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*
EOT: MOS-Specific JKT	-0.03	0.24	-0.07	1,123	0.01	1.01	200	-0.02	0.96	104	0.24	0.92	59	-0.06	1.02
IU: Army-Wide JKT	0.10	0.15	-0.12	940	0.65	0.21	177	0.68	0.20	118	0.69	0.20	84	0.63	0.27
EOT: APFT	0.22	0.02	0.09	1,179	242.61	32.74	213	249.47	30.47	111	243.41	32.15	67	245.28	25.72
IU: APFT	0.02	-0.05	0.03	843	244.58	72.58	159	245.60	34.86	106	241.77	36.40	70	246.27	38.38
EOT: Average AIT Grade	0.25	0.13	0.30	701	-0.10	1.05	157	0.14	0.83	70	0.03	0.82	90	0.18	0.73
EOT ALQ: Adjustment to Army Life	0.22	0.14	0.10	1,186	3.65	0.69	213	3.80	0.68	111	3.75	0.67	67	3.72	0.81

Note. d_{CW} = Cohen's *d* effect size for Conduct - Non-waivered mean difference. d_{MW} = Cohen's *d* effect size for Medical - Non-waivered mean difference. d_{OW} = Cohen's *d* effect size for Other waivered (i.e., Dependency, Drug Involvement Not Considered a Law Violation, and Administrative) - Non-waivered mean difference. Effect sizes calculated as (mean of Waivered group - mean of Non-waivered group) / pooled *SD* across groups.

Table A.4. Comparison of Soldiers with Different Types of Waivers to Non-waivered Soldiers on Continuously-Scaled Criterion Measures in the TOPS IOT&E Sample

				Non-waivered			Conduct Waiver			Medical Waiver			Other Waivers		
Criterion	d_{CW}	d_{MW}	d_{OW}	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*
EOT: Army-Wide JKT	0.04	0.14	0.03	1,401	20.42	3.95	77	20.56	4.06	86	20.91	2.98	44	20.55	3.47
EOT: MOS-Specific JKT	0.12	-0.02	-0.02	1,161	0.06	1.01	66	0.19	1.05	76	0.05	0.94	33	0.04	1.01
EOT: APFT	0.10	0.12	0.18	1,425	249.52	31.61	79	252.56	29.37	88	253.35	30.67	41	254.44	23.28
EOT: Average AIT Grade	0.27	0.00	0.03	2,142	-0.05	0.99	78	0.20	0.82	127	-0.05	1.18	92	-0.02	1.02
EOT ALQ: Adjustment to Army Life	0.07	0.13	-0.16	1,438	4.06	0.65	80	4.10	0.69	89	4.14	0.61	43	3.95	0.65
EOT ALQ: Disciplinary Incidents	-0.03	0.03	-0.65	701	0.29	0.62	45	0.27	0.54	39	0.31	0.66	9	0.00	0.00

Note. d_{CW} = Cohen's *d* effect size for Conduct - Non-waivered mean difference. d_{MW} = Cohen's *d* effect size for Medical - Non-waivered mean difference. d_{OW} = Cohen's *d* effect size for Other waivered (i.e., Dependency, Drug Involvement Not Considered a Law Violation, and Administrative) - Non-waivered mean difference. Effect sizes calculated as (mean of Waivered group - mean of Non-waivered group) / pooled *SD* across groups.

Table A.5. Comparison of Soldiers with Different Types of Waivers to Non-waivered Soldiers on Dichotomous Criterion Measures in the Army Class LV Sample

	Non-waivered		Conduct Waiver		Medical Waiver		Other Waivers	
Criterion	*N*	%	*N*	%	*N*	%	*N*	%
EOT ALQ: Disciplinary Incidents	1,186	30.8	213	29.1	111	27.0	67	35.8
IU ALQ: Disciplinary Incidents	862	33.1	164	29.9	108	31.5	70	28.6
IMT Graduation	3,542	87.3	590	86.3	330	87.0	300	82.7
6-month Attrition	3,875	11.4	753	12.0	428	11.0	310	13.2
12-month Attrition	3,873	16.5	753	16.7	428	15.9	310	18.7
24-month Attrition	3,872	23.8	753	26.2	427	22.5	308	27.9

Note. N = Total number of Soldiers in the given category with valid values on the given criterion. *%* = Percentage of Soldiers in the given category who experienced the event in question (i.e., % who have one or more disciplinary incidents, % who graduated from IMT, % who attrited within x-months of entering service).

Table A.6. Comparison of Soldiers with Different Types of Waivers to Non-waivered Soldiers on Dichotomous Criterion Measures in the TOPS IOT&E Sample

	Non-waivered		Conduct Waiver		Medical Waiver		Other Waivers	
Criterion	*N*	%	*N*	%	*N*	%	*N*	%
IMT Graduation w/o Fail	3,769	87.0	245	87.3	255	86.3	147	85.0
6-month Attrition	3,613	10.5	211	8.5	244	7.0	142	11.3

Note. N = Total number of Soldiers in the given category with valid values on the given criterion. *%* = Percentage of Soldiers in the given category who experienced the event in question (i.e., % who graduated from IMT without a single failure, % who attrited within 6 months of entering service).

Table A.7. Point-Biserial Correlations between Predictors and 12-month Attrition for Waivered and Non-waivered Soldiers in the Army Class LV Sample

	12-Month Attrition									
	No Waiver		Any Waiver		Conduct Waiver		Medical Waiver		Other Waiver	
Predictor	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*
AFQT	3,858	-.03	1325	**-.08**	751	-.04	426	**-.10**	307	-.11
TAPAS										
Can Do Composite	1,673	**-.05**	652	-.04	377	.00	211	-.05	154	-.05
Will Do Composite	1,673	**-.09**	652	**-.10**	377	-.08	211	-.04	154	-.11
Achievement	1,673	**-.05**	652	-.03	377	.00	211	-.12	154	-.07
Non-delinquency	1,673	-.02	652	.00	377	.06	211	-.02	154	-.05
Physical Conditioning	1,673	**-.08**	652	**-.14**	377	**-.15**	211	-.07	154	**-.18**
AIM										
Adjustment	1,710	**-.12**	708	-.06	424	-.07	213	-.03	170	.05
Physical Conditioning	1,692	**-.13**	701	**-.13**	420	**-.11**	210	-.09	164	-.15
Lie Scale	1,749	-.04	724	.02	437	-.03	217	**.14**	170	.00
RBI										
Achievement	3,016	**-.05**	1101	**-.11**	627	**-.13**	344	-.01	263	**-.13**
Fitness Motivation	3,016	**-.11**	1101	**-.15**	627	**-.19**	344	-.03	263	**-.19**
Hostility to Authority	3,016	.03	1101	.02	627	**.08**	344	-.03	263	-.12
Respect for Authority	3,015	**-.06**	1101	-.04	627	-.07	344	.04	263	.00
Lie Scale	3,016	.00	1101	.03	627	-.02	344	**.16**	263	.09

Note. Correlations in bold are statistically significant, $p < .05$ (two-tailed). Correlations enclosed in boxes are significantly different from those of non-waivered Soldiers, $p < .05$ (two-tailed). In Service = 0, Separated = 1.

Table A.8. Point-Biserial Correlations between Predictors and 24-month Attrition for Waivered and Non-waivered Soldiers in the Army Class LV Sample

	24-Month Attrition									
	No Waiver		Any Waiver		Conduct Waiver		Medical Waiver		Other Waiver	
Predictor	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*	*N*	*r*
AFQT	3,857	**-.03**	1323	**-.09**	751	-.05	425	-.09	305	-.11
TAPAS										
Can Do Composite	1,672	-.04	650	-.03	377	.02	210	-.04	152	-.05
Will Do Composite	1,672	**-.11**	650	**-.08**	377	-.07	210	-.04	152	-.05
Achievement	1,672	**-.06**	650	-.04	377	-.03	210	**-.16**	152	.01
Non-delinquency	1,672	-.03	650	.00	377	.08	210	-.03	152	-.04
Physical Conditioning	1,672	**-.11**	650	**-.13**	377	**-.16**	210	-.04	152	-.13
AIM										
Adjustment	1,709	**-.12**	706	**-.08**	424	-.10	212	-.07	168	.04
Physical Conditioning	1,691	**-.15**	699	**-.14**	420	**-.13**	209	-.11	162	**-.16**
Lie Scale	1,748	**-.05**	722	.05	437	.00	216	**.15**	168	.07
RBI										
Achievement	3,015	**-.04**	1099	**-.06**	627	-.07	343	.02	261	-.09
Fitness Motivation	3,015	**-.11**	1099	**-.14**	627	**-.17**	343	-.02	261	**-.18**
Hostility to Authority	3,015	**.04**	1099	.01	627	.05	343	-.05	261	-.11
Respect for Authority	3,014	**-.05**	1099	-.01	627	-.05	343	.04	261	.04
Lie Scale	3,015	-.01	1099	.01	627	-.02	343	**.14**	261	.07

Note. Correlations in bold are statistically significant, $p < .05$ (two-tailed). Correlations enclosed in boxes are significantly different from those of non-waivered Soldiers, $p < .05$ (two-tailed). In Service = 0, Separated = 1.

Table A.9. Incremental Validity Estimates for Predicting 12-month Attrition among Waivered and Non-waivered Soldiers in the Army Class LV Sample

	12-month Attrition							
	Non-waivered				Waivered			
Predictor	*N*	AFQT Only	AFQT + Predictor	Δ*R*	*N*	AFQT Only	AFQT + Predictor	Δ*R*
TAPAS								
Can Do Composite	1,666	.02	.05	.03	652	.06	.07	.01
Will Do Composite	1,666	.02	**.10**	**.08**	652	.06	**.11**	**.05**
Achievement	1,666	.02	**.06**	**.04**	652	.06	.07	.01
Non-delinquency	1,666	.02	.03	.01	652	.06	.06	.00
Physical Conditioning	1,666	.02	**.09**	**.07**	652	.06	**.16**	**.10**
AIM								
Adjustment	1,698	**.06**	**.14**	**.08**	706	.06	.09	.03
Physical Conditioning	1,681	**.06**	**.15**	**.09**	699	.06	**.14**	**.08**
Lie Scale	1,737	**.06**	**.09**	**.03**	722	.06	.06	.00
RBI								
Achievement	3,006	.03	**.06**	**.03**	1,097	**.08**	**.13**	**.05**
Fitness Motivation	3,006	.03	**.11**	**.08**	1,097	**.08**	**.19**	**.11**
Hostility to Authority	3,006	.03	.04	.01	1,097	**.08**	**.08**	.00
Respect for Authority	3,005	.03	**.06**	**.03**	1,097	**.08**	**.09**	.01
Lie Scale	3,006	.03	.03	.00	1,097	**.08**	**.08**	.00

Note. Estimates in bold are statistically significant, $p < .05$ (one-tailed).

Table A.10. Incremental Validity Estimates for Predicting 24-month Attrition among Waivered and Non-waivered Soldiers in the Army Class LV Sample

	24-month Attrition							
	Non-waivered				Waivered			
Predictor	*N*	AFQT Only	AFQT + Predictor	Δ*R*	*N*	AFQT Only	AFQT + Predictor	Δ*R*
TAPAS								
Can Do Composite	1,665	.03	.04	.01	650	**.09**	**.09**	.00
Will Do Composite	1,665	.03	**.12**	**.09**	650	**.09**	**.12**	.03
Achievement	1,665	.03	**.07**	**.04**	650	**.09**	**.10**	.01
Non-delinquency	1,665	.03	.04	.01	650	**.09**	**.09**	.00
Physical Conditioning	1,665	.03	**.12**	**.09**	650	**.09**	**.16**	**.07**
AIM								
Adjustment	1,697	**.05**	**.12**	**.07**	704	**.08**	**.12**	**.04**
Physical Conditioning	1,680	**.05**	**.16**	**.11**	697	**.08**	**.16**	**.08**
Lie Scale	1,736	**.05**	**.08**	**.03**	720	**.08**	**.09**	.01
RBI								
Achievement	3,005	**.04**	**.06**	**.02**	1,095	**.09**	**.10**	.01
Fitness Motivation	3,005	**.04**	**.12**	**.08**	1,095	**.09**	**.17**	**.08**
Hostility to Authority	3,005	**.04**	**.06**	.02	1,095	**.09**	**.09**	.00
Respect for Authority	3,004	**.04**	**.06**	**.02**	1,095	**.09**	**.09**	.00
Lie Scale	3,005	**.04**	**.04**	.00	1,095	**.09**	**.09**	.00

Note. Estimates in bold are statistically significant, $p < .05$ (one-tailed).

Table A.11. Predictor Scores by Gender for Waivered Soldiers in the Army Class LV Sample

	Male			Female		
Predictor	*N*	*M*	*SD*	*N*	*M*	*SD*
AFQT	1,395	59.29	18.64	300	54.27	18.24
TAPAS						
Can Do Composite	686	-0.33	1.78	144	-0.39	1.71
Will Do Composite	686	0.18	1.81	144	0.20	1.85
Achievement	686	0.19	0.69	144	0.29	0.67
Non-delinquency	686	0.01	0.62	144	0.24	0.60
Physical Conditioning	686	0.18	0.72	144	0.00	0.72
AIM						
Adjustment	766	1.27	0.28	138	1.28	0.32
Physical Conditioning	756	1.21	0.34	139	1.21	0.31
Lie Scale	788	0.15	0.17	140	0.12	0.15
RBI						
Achievement	1,151	3.46	0.55	254	3.75	0.59
Fitness Motivation	1,151	3.37	0.66	254	2.90	0.65
Hostility to Authority	1,151	2.67	0.62	254	2.22	0.59
Respect for Authority	1,151	3.43	0.68	254	3.70	0.69
Lie Scale	1,151	0.09	0.15	254	0.11	0.16

Table A.12. Predictor Scores by Gender for Non-waivered Soldiers in the Army Class LV Sample

	Male			Female		
Predictor	*N*	*M*	*SD*	*N*	*M*	*SD*
AFQT	4,278	55.97	19.61	958	51.99	18.44
TAPAS						
Can Do Composite	1,841	-0.47	1.77	374	-0.42	1.87
Will Do Composite	1,841	0.05	1.89	374	0.01	1.94
Achievement	1,841	0.15	0.63	374	0.21	0.63
Non-delinquency	1,841	0.07	0.65	374	0.31	0.65
Physical Conditioning	1,841	0.15	0.70	374	-0.07	0.74
AIM						
Adjustment	1,889	1.27	0.29	379	1.25	0.32
Physical Conditioning	1,874	1.21	0.33	374	1.08	0.34
Lie Scale	1,936	0.17	0.17	386	0.13	0.16
RBI						
Achievement	3,320	3.49	0.57	761	3.72	0.56
Fitness Motivation	3,320	3.37	0.65	761	2.89	0.66
Hostility to Authority	3,320	2.56	0.65	761	2.26	0.61
Respect for Authority	3,320	3.47	0.70	760	3.66	0.67
Lie Scale	3,320	0.10	0.15	761	0.11	0.16

Table A.13. Predictor Scores by Gender for Conduct Waivered Soldiers in Army Class LV Sample

		Male			Female		
Predictor	*d*	*N*	*M*	*SD*	*N*	*M*	*SD*
AFQT	-0.37	810	59.12	17.78	90	52.67	17.25
TAPAS							
Can Do Composite	-0.05	402	-0.36	1.75	48	-0.45	1.61
Will Do Composite	0.01	402	0.11	1.84	48	0.12	1.82
Achievement	0.08	402	0.21	0.70	48	0.28	0.79
Non-delinquency	0.48	402	-0.06	0.56	48	0.20	0.54
Physical Conditioning	-0.25	402	0.21	0.71	48	0.02	0.79
AIM							
Adjustment	-0.07	465	1.25	0.28	40	1.23	0.27
Physical Conditioning	0.00	458	1.21	0.34	41	1.21	0.34
Lie Scale	-0.32	480	0.16	0.17	41	0.11	0.14
RBI							
Achievement	0.58	671	3.45	0.56	81	3.79	0.61
Fitness Motivation	-0.64	671	3.40	0.63	81	2.96	0.71
Hostility to Authority	-0.75	671	2.78	0.59	81	2.32	0.65
Respect for Authority	0.50	671	3.44	0.69	81	3.78	0.69
Lie Scale	0.08	671	0.09	0.15	81	0.10	0.16

Note. d = Cohen's *d* effect size for Female-Male mean difference. Effect sizes calculated as (Female group mean - Male group mean) / pooled *SD* across groups.

Table A.14. Predictor Scores by Gender for Medical Waivered Soldiers in the Army Class LV Sample

		Male			Female		
Predictor	*d*	*N*	*M*	*SD*	*N*	*M*	*SD*
AFQT	-0.09	454	59.61	19.87	86	57.86	19.66
TAPAS							
Can Do Composite	-0.09	219	-0.19	1.79	39	-0.36	1.85
Will Do Composite	0.00	219	0.34	1.80	39	0.33	2.00
Achievement	0.39	219	0.20	0.64	39	0.45	0.63
Non-delinquency	0.21	219	0.08	0.72	39	0.22	0.66
Physical Conditioning	-0.09	219	0.17	0.80	39	0.11	0.62
AIM							
Adjustment	-0.18	230	1.30	0.28	40	1.25	0.35
Physical Conditioning	0.04	227	1.23	0.32	40	1.24	0.31
Lie Scale	-0.12	237	0.15	0.17	40	0.13	0.16
RBI							
Achievement	0.60	364	3.47	0.54	71	3.80	0.58
Fitness Motivation	-0.54	364	3.33	0.70	71	2.99	0.55
Hostility to Authority	-0.56	364	2.54	0.61	71	2.20	0.61
Respect for Authority	0.54	364	3.43	0.66	71	3.79	0.65
Lie Scale	0.20	364	0.08	0.14	71	0.11	0.16

Note. d_{FM} = Cohen's *d* effect size for Female-Male mean difference. Effect sizes calculated as (Female group mean - Male group mean) / pooled *SD* across groups.

Table A.15. Predictor Scores by Gender for Other Waivered Soldiers in the Army Class LV Sample

		Male			Female		
Predictor	*d*	*N*	*M*	*SD*	*N*	*M*	*SD*
AFQT	-0.32	302	58.60	19.01	160	52.72	17.55
TAPAS							
Can Do Composite	0.04	164	-0.44	1.88	74	-0.38	1.73
Will Do Composite	-0.01	164	0.13	1.87	74	0.11	1.88
Achievement	0.09	164	0.14	0.69	74	0.20	0.66
Non-delinquency	0.33	164	0.08	0.61	74	0.27	0.57
Physical Conditioning	-0.27	164	0.10	0.65	74	-0.08	0.68
AIM							
Adjustment	0.26	182	1.27	0.29	74	1.35	0.31
Physical Conditioning	0.13	177	1.18	0.34	74	1.22	0.27
Lie Scale	-0.24	184	0.17	0.18	75	0.13	0.15
RBI							
Achievement	0.46	258	3.49	0.53	134	3.75	0.60
Fitness Motivation	-0.75	258	3.35	0.66	134	2.87	0.63
Hostility to Authority	-0.80	258	2.59	0.62	134	2.12	0.54
Respect for Authority	0.36	258	3.44	0.66	134	3.69	0.71
Lie Scale	0.13	258	0.11	0.15	134	0.13	0.18

Note. d = Cohen's *d* effect size for Female-Male mean difference. Effect sizes calculated as (Female group mean - Male group mean) / pooled *SD* across groups.

Table A.16. Predictor Scores by Gender and Waiver Status for Soldiers in the TOPS IOT&E Sample

		Male			Female		
Predictor	*d*	*N*	*M*	*SD*	*N*	*M*	*SD*
				Non-waivered			
AFQT	-0.23	14,589	62.11	20.90	2,590	57.47	20.08
TAPAS							
Can Do Composite	-0.08	13,787	0.06	0.98	2,511	-0.02	0.97
Will Do Composite	-0.10	13,787	0.04	1.00	2,511	-0.05	0.98
Achievement	-0.01	13,787	-0.01	1.01	2,511	-0.02	0.95
Non-delinquency	0.15	13,787	0.01	0.99	2,511	0.16	0.94
Physical Conditioning	-0.39	13,787	0.06	1.00	2,511	-0.32	0.96
				Waivered			
AFQT	-0.24	2,185	64.92	20.84	426	60.04	19.19
TAPAS							
Can Do Composite	0.06	2,079	0.19	0.99	414	0.25	0.96
Will Do Composite	-0.06	2,079	0.12	1.00	414	0.06	0.99
Achievement	0.10	2,079	0.16	1.00	414	0.26	0.98
Non-delinquency	0.15	2,079	0.04	0.98	414	0.19	0.96
Physical Conditioning	-0.43	2,079	0.02	0.98	414	-0.41	1.02
				Conduct Waiver			
AFQT	-0.31	815	63.75	19.55	79	57.89	18.40
TAPAS							
Can Do Composite	0.15	778	0.16	1.00	77	0.30	0.84
Will Do Composite	0.13	778	0.05	1.02	77	0.18	0.98
Achievement	0.14	778	0.18	1.00	77	0.32	1.02
Non-delinquency	0.27	778	-0.09	0.96	77	0.19	1.07
Physical Conditioning	-0.16	778	0.09	0.98	77	-0.08	1.12
				Medical Waiver			
AFQT	-0.22	1,064	64.94	20.89	174	60.52	19.84
TAPAS							
Can Do Composite	0.01	1,008	0.13	1.00	168	0.14	1.01
Will Do Composite	-0.05	1,008	0.09	1.00	168	0.04	1.00
Achievement	0.17	1,008	0.03	1.01	168	0.20	0.95
Non-delinquency	0.09	1,008	0.06	0.98	168	0.14	0.96
Physical Conditioning	-0.37	1,008	0.04	0.98	168	-0.34	1.07
				Other Waiver			
AFQT	-0.31	442	66.91	22.98	197	60.46	18.78
TAPAS							
Can Do Composite	-0.08	423	0.43	0.95	190	0.35	0.95
Will Do Composite	-0.32	423	0.34	0.93	190	0.04	0.96
Achievement	-0.14	423	0.43	0.92	190	0.30	0.96
Non-delinquency	-0.05	423	0.24	0.97	190	0.20	0.99
Physical Conditioning	-0.44	423	-0.13	0.97	190	-0.54	0.93

Note. *d* = Cohen's *d* effect size for Female-Male mean difference. Effect sizes calculated as (Female group mean - Male group mean) / pooled *SD* across groups.

Table A.17. Predictor Scores by Race/Ethnic Group for Waivered Soldiers in the Army Class LV Sample

	White			Black			White Non-Hispanic			Hispanic		
Predictor	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*
AFQT	1,373	60.07	18.54	231	49.39	15.36	1,227	60.77	18.67	213	54.59	17.49
TAPAS												
Can Do Composite	689	-0.29	1.77	94	-0.49	1.76	627	-0.30	1.75	96	-0.29	1.86
Will Do Composite	689	0.22	1.84	94	0.22	1.74	627	0.17	1.83	96	0.36	1.83
Achievement	689	0.23	0.70	94	0.12	0.54	627	0.22	0.70	96	0.28	0.72
Non-delinquency	689	0.05	0.63	94	0.11	0.56	627	0.06	0.63	96	-0.06	0.56
Physical Conditioning	689	0.16	0.73	94	0.16	0.72	627	0.14	0.72	96	0.31	0.74
AIM												
Adjustment	754	1.27	0.29	99	1.30	0.27	691	1.26	0.29	102	1.32	0.26
Physical Conditioning	747	1.21	0.34	97	1.24	0.28	687	1.20	0.35	98	1.25	0.31
Lie Scale	774	0.15	0.17	103	0.13	0.15	707	0.15	0.17	107	0.17	0.19
RBI	1,151	36.94	4.83	182	38.16	5.32	1,028	36.89	4.79	176	37.42	5.20
Achievement	1,151	3.48	0.55	182	3.73	0.63	1,028	3.48	0.55	176	3.51	0.61
Fitness Motivation	1,151	3.29	0.67	182	3.27	0.74	1,028	3.29	0.68	176	3.32	0.67
Hostility to Authority	1,151	2.62	0.64	182	2.42	0.61	1,028	2.63	0.63	176	2.55	0.66
Respect for Authority	1,151	3.46	0.67	182	3.63	0.76	1,028	3.46	0.66	176	3.44	0.71
Lie Scale	1,151	0.09	0.14	182	0.14	0.17	1,028	0.08	0.13	176	0.13	0.19

Table A.18. Predictor Scores by Race/Ethnic Group for Non-waivered Soldiers in the Army Class LV Sample

	White			Black			White Non-Hispanic			Hispanic		
Predictor	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*
AFQT	4,123	57.26	19.38	790	45.85	16.34	3,519	58.42	19.43	826	50.86	17.90
TAPAS												
Can Do Composite	1,754	-0.45	1.81	325	-0.54	1.66	1,529	-0.42	1.81	329	-0.62	1.78
Will Do Composite	1,754	0.06	1.91	325	-0.01	1.88	1,529	0.07	1.91	329	-0.07	1.91
Achievement	1,754	0.17	0.64	325	0.13	0.57	1,529	0.18	0.64	329	0.11	0.62
Non-delinquency	1,754	0.11	0.66	325	0.11	0.62	1,529	0.12	0.66	329	0.05	0.61
Physical Conditioning	1,754	0.11	0.72	325	0.15	0.69	1,529	0.12	0.72	329	0.12	0.73
AIM												
Adjustment	1,769	1.26	0.30	359	1.29	0.26	1,526	1.26	0.30	352	1.29	0.26
Physical Conditioning	1,752	1.18	0.35	357	1.21	0.30	1,513	1.18	0.35	348	1.19	0.32
Lie Scale	1,802	0.15	0.16	375	0.19	0.18	1,554	0.14	0.16	361	0.21	0.18
RBI												
Achievement	3,286	3.50	0.57	569	3.71	0.59	2,812	3.49	0.57	632	3.57	0.57
Fitness Motivation	3,286	3.28	0.67	569	3.27	0.69	2,812	3.28	0.67	632	3.29	0.67
Hostility to Authority	3,286	2.50	0.65	569	2.54	0.70	2,812	2.49	0.65	632	2.51	0.67
Respect for Authority	3,286	3.49	0.69	568	3.58	0.74	2,812	3.48	0.69	632	3.54	0.68
Lie Scale	3,286	0.09	0.14	569	0.13	0.17	2,812	0.08	0.13	632	0.14	0.18

Table A.19. Predictor Scores by Race/Ethnic Group for Conduct Waivered Soldiers in the Army Class LV Sample

			White			Black			White Non-Hispanic			Hispanic		
Predictor	d_{BW}	d_{HNH}	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*
AFQT	-0.64	-0.29	770	59.88	17.89	91	49.66	13.97	690	60.32	17.90	114	55.23	17.28
TAPAS														
Can Do Composite	-0.04	0.00	393	-0.32	1.75	34	-0.40	1.82	358	-0.35	1.73	51	-0.35	1.79
Will Do Composite	0.16	0.07	393	0.14	1.84	34	0.44	1.90	358	0.09	1.85	51	0.22	1.78
Achievement	-0.21	0.02	393	0.25	0.71	34	0.11	0.61	358	0.24	0.70	51	0.26	0.79
Non-delinquency	0.14	-0.16	393	-0.03	0.57	34	0.05	0.55	358	-0.03	0.57	51	-0.11	0.49
Physical Conditioning	0.16	0.10	393	0.20	0.71	34	0.32	0.80	358	0.18	0.71	51	0.25	0.70
AIM														
Adjustment	0.20	0.25	445	1.25	0.29	35	1.30	0.23	412	1.24	0.29	53	1.31	0.24
Physical Conditioning	0.30	0.13	440	1.21	0.35	34	1.30	0.24	410	1.21	0.35	49	1.25	0.32
Lie Scale	-0.20	0.15	458	0.15	0.17	38	0.12	0.15	422	0.15	0.17	57	0.18	0.19
RBI														
Achievement	0.57	0.02	649	3.46	0.56	74	3.78	0.57	584	3.46	0.55	93	3.47	0.61
Fitness Motivation	0.02	0.17	649	3.35	0.64	74	3.37	0.75	584	3.34	0.65	93	3.45	0.66
Hostility to Authority	-0.43	-0.06	649	2.77	0.61	74	2.49	0.65	584	2.77	0.60	93	2.73	0.63
Respect for Authority	0.37	-0.09	649	3.45	0.68	74	3.71	0.74	584	3.46	0.68	93	3.39	0.74
Lie Scale	0.32	0.27	649	0.08	0.14	74	0.14	0.19	584	0.08	0.13	93	0.12	0.19

Note. d_{BW} = Cohen's *d* for Black-White mean difference, d_{HNH} = Cohen's *d* for Hispanic-White Non-Hispanic mean difference. Effect sizes calculated as (mean of Black/Hispanic group - mean of White/White-Non Hispanic group) / pooled *SD* across groups being compared.

Table A.20. Predictor Scores by Race/Ethnic Group for Medical Waivered Soldiers in the Army Class LV Sample

			White			Black			White Non-Hispanic			Hispanic		
Predictor	d_{BW}	d_{HNH}	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*
AFQT	-0.64	-0.35	430	61.06	19.60	75	49.77	15.20	394	61.69	19.78	56	54.98	18.64
TAPAS														
Can Do Composite	-0.16	0.13	206	-0.14	1.81	34	-0.41	1.55	189	-0.19	1.79	28	0.07	2.03
Will Do Composite	-0.13	0.14	206	0.46	1.83	34	0.23	1.77	189	0.37	1.83	28	0.63	1.97
Achievement	-0.41	0.28	206	0.30	0.65	34	0.06	0.51	189	0.27	0.65	28	0.45	0.65
Non-delinquency	0.08	-0.20	206	0.11	0.74	34	0.16	0.64	189	0.12	0.73	28	-0.03	0.72
Physical Conditioning	-0.09	0.28	206	0.20	0.80	34	0.14	0.67	189	0.16	0.77	28	0.41	0.98
AIM														
Adjustment	-0.19	0.28	218	1.31	0.29	36	1.25	0.32	200	1.30	0.29	27	1.37	0.24
Physical Conditioning	-0.21	0.05	215	1.25	0.32	36	1.18	0.28	197	1.24	0.32	27	1.25	0.31
Lie Scale	-0.24	-0.09	224	0.15	0.17	37	0.12	0.14	206	0.15	0.17	28	0.14	0.20
RBI														
Achievement	-0.01	0.15	351	3.53	0.53	55	3.52	0.69	320	3.52	0.54	47	3.60	0.52
Fitness Motivation	-0.04	-0.16	351	3.30	0.67	55	3.27	0.79	320	3.30	0.68	47	3.19	0.60
Hostility to Authority	0.05	-0.36	351	2.47	0.63	55	2.50	0.56	320	2.50	0.63	47	2.27	0.64
Respect for Authority	0.02	0.01	351	3.48	0.67	55	3.50	0.72	320	3.49	0.66	47	3.49	0.72
Lie Scale	0.38	0.45	351	0.08	0.14	55	0.14	0.18	320	0.07	0.12	47	0.15	0.20

Note. d_{BW} = Cohen's *d* for Black-White mean difference, d_{HNH} = Cohen's *d* for Hispanic-White Non-Hispanic mean difference. Effect sizes calculated as (mean of Black/Hispanic group - mean of White/White-Non Hispanic group) / pooled *SD* across groups being compared.

Table A.21. Predictor Scores by Race/Ethnic Group for Other Waivered Soldiers in the Army Class LV Sample

			White			Black			White Non-Hispanic			Hispanic		
Predictor	d_{BW}	d_{HNH}	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*
AFQT	-0.63	-0.45	346	58.76	18.55	94	47.76	16.01	291	60.35	18.90	72	52.28	16.73
TAPAS														
Can Do Composite	-0.09	0.03	191	-0.42	1.83	38	-0.59	1.94	167	-0.39	1.83	33	-0.33	1.74
Will Do Composite	0.01	0.13	191	0.10	1.90	38	0.12	1.84	167	0.09	1.86	33	0.34	1.94
Achievement	0.02	0.15	191	0.16	0.71	38	0.17	0.54	167	0.15	0.72	33	0.25	0.68
Non-delinquency	0.16	-0.35	191	0.11	0.61	38	0.20	0.50	167	0.15	0.62	33	-0.04	0.45
Physical Conditioning	0.08	0.20	191	0.03	0.66	38	0.09	0.75	167	0.02	0.66	33	0.15	0.61
AIM														
Adjustment	0.18	0.01	205	1.27	0.30	37	1.33	0.25	177	1.29	0.30	40	1.29	0.31
Physical Conditioning	0.21	0.17	201	1.17	0.33	36	1.24	0.30	175	1.17	0.34	38	1.23	0.27
Lie Scale	-0.07	0.54	207	0.16	0.18	38	0.15	0.17	178	0.14	0.16	41	0.24	0.20
RBI														
Achievement	0.66	0.14	297	3.50	0.53	78	3.88	0.61	253	3.50	0.51	57	3.58	0.66
Fitness Motivation	-0.02	0.03	297	3.17	0.69	78	3.16	0.68	253	3.18	0.71	57	3.20	0.66
Hostility to Authority	-0.37	-0.07	297	2.48	0.63	78	2.25	0.64	253	2.48	0.61	57	2.44	0.70
Respect for Authority	0.35	0.05	297	3.48	0.62	78	3.74	0.85	253	3.48	0.64	57	3.51	0.59
Lie Scale	0.38	0.43	297	0.10	0.15	78	0.16	0.16	253	0.09	0.14	57	0.17	0.22

Note. d_{BW} = Cohen's *d* for Black-White mean difference, d_{HNH} = Cohen's *d* for Hispanic-White Non-Hispanic mean difference. Effect sizes calculated as (mean of Black/Hispanic group - mean of White/White-Non Hispanic group) / pooled *SD* across groups being compared.

Table A.22. Predictor Scores by Race/Ethnic Group and Waiver Status for Soldiers in the TOPS IOT&E Sample

			White			Black			White Non-Hispanic			Hispanic		
Predictor	d_{BW}	d_{HNH}	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*
							Non-waivered							
AFQT	-0.61	-0.72	13,112	63.02	20.72	2,219	51.24	18.10	10,862	65.47	20.14	2,329	51.25	19.34
TAPAS														
Can Do Composite	-0.07	-0.19	12,451	0.07	0.98	2,079	0.00	0.97	10,314	0.10	0.99	2,219	-0.09	0.95
Will Do Composite	-0.07	-0.15	12,451	0.05	1.00	2,079	-0.02	0.98	10,314	0.07	1.01	2,219	-0.07	0.95
Achievement	-0.09	-0.10	12,451	0.01	1.00	2,079	-0.08	0.96	10,314	0.02	1.02	2,219	-0.08	0.94
Non-delinquency	0.05	-0.10	12,451	0.04	0.99	2,079	0.08	0.96	10,314	0.05	1.00	2,219	-0.05	0.96
Physical Conditioning	-0.21	-0.12	12,451	0.04	1.01	2,079	-0.17	0.96	10,314	0.06	1.02	2,219	-0.06	0.94
							Waivered							
AFQT	-0.66	-0.59	2,087	65.48	20.34	278	52.61	18.39	1,784	67.22	19.91	322	55.46	20.12
TAPAS														
Can Do Composite	-0.07	-0.08	1,990	0.22	0.97	264	0.15	1.02	1,705	0.23	0.96	304	0.15	1.05
Will Do Composite	-0.07	-0.13	1,990	0.13	0.98	264	0.06	0.98	1,705	0.14	0.98	304	0.02	1.04
Achievement	-0.17	-0.06	1,990	0.20	1.00	264	0.03	0.94	1,705	0.20	1.00	304	0.15	0.99
Non-delinquency	0.16	-0.08	1,990	0.06	0.98	264	0.23	1.00	1,705	0.07	0.97	304	-0.01	1.02
Physical Conditioning	-0.26	-0.09	1,990	-0.02	1.01	264	-0.28	0.91	1,705	-0.01	1.01	304	-0.10	0.97
							Conduct Waiver							
AFQT	-0.80	-0.44	755	64.47	19.20	70	49.89	17.36	673	65.39	18.98	91	56.96	19.17
TAPAS														
Can Do Composite	-0.27	-0.02	721	0.19	0.98	67	-0.05	0.81	645	0.20	0.98	85	0.18	0.96
Will Do Composite	-0.14	-0.08	721	0.07	1.01	67	-0.06	0.94	645	0.09	1.01	85	0.01	1.03
Achievement	-0.25	0.14	721	0.22	0.99	67	-0.04	1.05	645	0.21	1.00	85	0.34	0.95
Non-delinquency	0.01	-0.12	721	-0.06	0.98	67	-0.06	0.85	645	-0.05	0.98	85	-0.16	0.96
Physical Conditioning	-0.12	-0.03	721	0.07	1.01	67	-0.03	0.85	645	0.08	1.01	85	0.04	1.03
							Medical Waiver							
AFQT	-0.70	-0.58	981	65.70	20.49	130	52.31	17.96	842	67.41	20.14	148	55.84	19.86
TAPAS														
Can Do Composite	0.01	-0.10	929	0.15	0.97	123	0.16	1.03	796	0.16	0.95	143	0.05	1.13
Will Do Composite	-0.01	-0.12	929	0.10	1.00	123	0.09	0.96	796	0.11	0.98	143	-0.01	1.10

Note. d_{BW} = Cohen's *d* for Black-White mean difference, d_{HNH} = Cohen's *d* for Hispanic-White Non-Hispanic mean difference. Effect sizes calculated as (mean of Black/Hispanic group - mean of White/White-Non Hispanic group) / pooled *SD* across groups being compared.

Table A.22. Continued

			White			Black			White Non-Hispanic			Hispanic		
Predictor	d_{BW}	d_{HNH}	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*
Achievement	-0.19	-0.10	929	0.09	1.01	123	-0.09	0.90	796	0.10	1.01	143	-0.01	1.02
Non-delinquency	0.23	-0.09	929	0.08	0.99	123	0.29	0.89	796	0.08	0.98	143	-0.01	1.08
Physical Conditioning	-0.21	-0.01	929	0.00	1.01	123	-0.21	0.92	796	0.01	1.02	143	0.00	0.98
							Other Waiver							
AFQT	-0.57	-0.82	480	66.49	21.87	92	54.82	19.35	382	69.85	20.93	102	52.83	20.78
TAPAS														
Can Do Composite	-0.06	-0.21	461	0.42	0.92	88	0.36	1.12	370	0.47	0.91	94	0.27	0.96
Will Do Composite	-0.10	-0.26	461	0.25	0.91	88	0.15	1.03	370	0.29	0.90	94	0.05	0.92
Achievement	-0.14	-0.21	461	0.40	0.94	88	0.28	0.89	370	0.44	0.94	94	0.25	0.91
Non-delinquency	0.18	-0.14	461	0.21	0.94	88	0.41	1.21	370	0.24	0.92	94	0.11	0.97
Physical Conditioning	-0.38	-0.17	461	-0.22	0.96	88	-0.57	0.88	370	-0.19	0.99	94	-0.34	0.83

Note. d_{BW} = Cohen's *d* for Black-White mean difference, d_{HNH} = Cohen's *d* for Hispanic-White Non-Hispanic mean difference. Effect sizes calculated as (mean of Black/Hispanic group - mean of White/White-Non Hispanic group) / pooled *SD* across groups being compared.